Geigerite $\mathbf{Mn_5^{2+}(AsO_4)_2(AsO_3OH)_2 \cdot 10H_2O}$

Crystal Data: Triclinic. *Point Group:* $\overline{1}$. Subhedral crystals, to 0.5 mm, platy on {010}, striated ‖ [001]; in fibrous to fine-grained aggregates.

Physical Properties: *Cleavage:* Perfect on {010}. *Tenacity:* Extremely brittle. Hardness = ∼3 VHN = 105 (20 g load). D(meas.) = 3.05(10) D(calc.) = 3.00

Optical Properties: Transparent to translucent. *Color:* Pale rose-red to colorless. *Streak:* White. *Luster:* Vitreous to pearly. *Optical Class:* Biaxial (–). *Pleochroism:* Very weak; colorless to rose-red in thick sections. *Orientation:* $X \simeq b$; $Y \simeq a$; $Z \simeq c$; $Z \wedge c = 15°$ on {010}; $Z \wedge c = 6°$ on {100}; X almost $\perp$ {010}. *Absorption:* $Z > Y \simeq X$. $\alpha = 1.601(2)$ $\beta = 1.630(2)$ $\gamma = 1.660(2)$ 2V(meas.) = Large. 2V(calc.) = 89°

Cell Data: *Space Group:* $P\overline{1}$. $a = 7.944(1)$ $b = 10.691(1)$ $c = 6.770(1)$ $\alpha = 80.97(1)°$ $\beta = 84.20(1)°$ $\gamma = 81.85(1)°$ Z = 1

X-ray Powder Pattern: Falotta mine, Switzerland.
10.45 (100), 3.051 (24), 3.507 (21), 3.340 (20), 3.011 (17), 2.786 (14), 7.85 (13)

Chemistry:

	(1)	(2)
As_2O_5	50.12	45.40
MnO	39.71	35.03
CaO	0.12	
H_2O	[10.05]	19.57
Total	[100.00]	100.00

(1) Falotta mine, Switzerland; by electron microprobe, average of five analyses; H_2O by difference.
(2) $Mn_5(AsO_4)_2(AsO_3OH)_2 \cdot 10H_2O$.

Occurrence: In cavities in radiolarites, formed by metamorphism of manganese oxide ores.

Association: Brandtite, sarkinite, grischunite, bergslagite, manganberzeliite, tilasite.

Distribution: At the Falotta mine, Oberhalbstein, Graubünden, Switzerland.

Name: In honor of Dr. Thomas Geiger (1886–1976), Wiesendangen, Switzerland, who studied Falotta manganese ores.

Type Material: Natural History Museum, Basel, 30804; Basel University, Basel, Switzerland.

References: (1) Graeser, S., H. Schwander, R. Bianchi, T. Pilati, and C.M. Gramaccioli (1989) Geigerite, the Mn analogue of chudobaite: its description and crystal structure. Amer. Mineral., 74, 676–684.