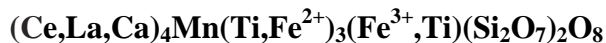


Christofschäferite-(Ce)

Crystal Data: Monoclinic. *Point Group:* 2/m. As stubby prismatic crystals or isolated grains to 3 mm.

Physical Properties: *Cleavage:* None observed. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 6 D(meas.) = 4.8(1) D(calc.) = 4.853

Optical Properties: Translucent. *Color:* Black. *Streak:* Brown. *Luster:* Resinous.

Optical Class: Biaxial (-). $\alpha = 1.945(10)$ $\beta = 2.015(10)$ $\gamma = 2.050(10)$ $2V(\text{meas.}) = 70(10)^\circ$ $2V(\text{calc.}) = 68^\circ$ *Pleochroism:* Strong; very dark brown to light brown. *Absorption:* $Z > Y > X$.

Cell Data: Space Group: $P2_1/m$. $a = 13.3722(4)$ $b = 5.7434(1)$ $c = 11.0862(2)$ $\beta = 100.580(2)^\circ$ $Z = 2$

X-ray Powder Pattern: Wingertsbergwand, Eifel Mountains, Rhineland-Palatinate, Germany. 2.730 (100), 3.169 (81), 3.480 (78), 4.64(65), 2.169 (46), 1.737 (46), 3.095 (43), 4.90 (39)

Chemistry:	(1)
CaO	2.61
La ₂ O ₃	19.60
Ce ₂ O ₃	22.95
Pr ₂ O ₃	0.56
Nd ₂ O ₃	2.28
MgO	0.08
MnO	4.39
FeO	4.18
Fe ₂ O ₃	3.11
Al ₂ O ₃	0.08
TiO ₂	19.02
Nb ₂ O ₅	0.96
SiO ₂	9.38
Total	99.20

(1) Wingertsbergwand, Eifel Mountains, Rhineland-Palatinate, Germany; average of 5 electron microprobe analyses, $\text{Fe}^{2+}:\text{Fe}^{3+} = 3:2$, from structural analysis, corresponds to $(\text{Ce}_{1.72}\text{La}_{1.48}\text{Nd}_{0.17}\text{Pr}_{0.04}\text{Ca}_{0.57})_{\Sigma=3.98}\text{Mn}^{2+}_{0.76}\text{Fe}^{2+}_{0.72}\text{Mg}_{0.02}\text{Ti}_{2.935}\text{Fe}^{3+}_{0.48}\text{Al}_{0.02}\text{Nb}_{0.09}\text{Si}_{3.98}\text{O}_{22}$.

Mineral Group: Chevkinite group.

Occurrence: A metasomatic reaction product between Mn-rich rock and alkali basalt, found in a volcanic ejectum.

Association: Orthoclase, rhodonite, bustamite, tephroite, zircon, fluorapatite, pyrophanite, jacobsite.

Distribution: From Wingertsbergwand (Wingertsberg Mt.) of the Laacher See volcano near Mendig, Eifel Mountains, Rhineland-Palatinate (Rheinland-Pfalz), Germany.

Name: Honors Christof Schäfer (b. 1961), a German mineral collector, who collected the first specimens.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia; 4227/1.

References: (1) Chukanov, N.V., S.M. Aksenov, R.K. Rastsvetaeva, D.I. Belakovskiy, J. Göttlicher, S.N. Britvin, and S. Möckel (2012) Christofschäferite-(Ce), $(\text{Ce,La,Ca})_4\text{Mn}^{2+}(\text{Ti,Fe}^{3+})_3(\text{Fe}^{3+},\text{Fe}^{2+},\text{Ti})(\text{Si}_2\text{O}_7)_2\text{O}_8$, a new chevkinite-group mineral from the Eifel area, Germany. *Novye dannye o mineralakh*, 47, 33-42 (in English). (2) (2013) *Amer. Mineral.*, 98, 2201 (abs. ref. 1).