Cerite-(Ce) $(Ce, La, Ca)_9(Mg, Fe^{3+})(SiO_4)_3(SiO_3OH)_4(OH)_3$

Crystal Data: Hexagonal. *Point Group*: 3*m*. As crudely formed pseudo-octahedral crystals, to 7 mm; massive.

Physical Properties: *Fracture*: Uneven. Hardness = 5-5.5 D(meas.) = 4.75(11) D(calc.) = 4.86

Optical Properties: Translucent to opaque. *Color*: Clove-brown with a reddish tinge; pale lavender-brown to colorless in thin fragments. *Streak*: Grayish white. *Luster*: Resinous.
Optical Class: Uniaxial (+); anomalously biaxial. ω = 1.806-1.817 ε = 1.808-1.825
2V(meas.) = 0°-25°

Cell Data: *Space Group*: *R*3*c*. *a* = 10.779(6) *c* = 38.061(7) Z = 6

X-ray Powder Pattern: Mountain Pass, California, USA.
2.95 (100), 1.954 (50), 3.47 (42), 2.69 (42), 2.83 (38), 3.31 (33), 3.11 (30)

Chemistry:

	(1)		(1)
SiO_2	22.24	CaO	4.48
TiO_2	0.08	BaO	0.45
Al_2O_3	1.14	Na_2O	0.24
La_2O_3	30.04	K_2O	0.16
Ce_2O_3	35.05	H_2O^+	2.72
Fe_2O_3	0.92	H_2O^-	0.17
MnO	0.20	SO_3	0.14
MgO	1.90	F	0.07
		Total	[100.00]

(1) Mountain Pass, California, USA; recalculated to 100% after deduction of 17.7% bastnäsite; corresponds to $(Ce_{3.90}La_{3.37}Ca_{1.63})_{\Sigma=8.90}(Mg_{0.61}Fe^{3+}_{0.39}Na_{0.14}K_{0.06}Ba_{0.05})_{\Sigma=1.25}Si_{6.83}O_{25.68}(OH)_{3.89}$.

Mineral Group: Cerite supergroup, cerite group.

Occurrence: In rare-earth-bearing hydrothermal quartz-barite-carbonatite veins in shonkinite (Mountain Pass, California, USA).

Association: Bastnäsite, allanite, epidote, monazite, törnebohmite, fluorite, uraninite, barite, quartz, galena.

Distribution: In Sweden, at the Bastnäs mine, Riddarhyttan, Västmanland. In the USA, from the Mountain Pass district, San Bernardino Co., California, and in Colorado, at Jamestown, Boulder Co. In Canada, from Papineau Co., and Mont Saint-Hilaire, Quebec. In the Kyshtymsk district, Ural Mountains, Russia.

Name: A suffix, *Ce*, and base name for the dominant rare earth element, *ceri*um; the element was discovered in this mineral and named for the planetoid Ceres, also then just discovered.

Type Material: Harvard University, Cambridge, Massachusetts, USA, 48851.

References: (1) Dana, E.S. (1892) Dana's system of mineralogy, (6th edition), 550. (2) Gay, P. (1957) An X-ray investigation of some rare-earth silicates: cerite, lessingite, beckelite, britholite, and stillwellite. Mineral. Mag., 31, 455-468. (3) Gay, P. (1957) The crystallography of cerite. Amer. Mineral., 42, 429-432. (4) Glass, J.J., H.T. Evans, Jr., M.K. Carron, and F.A. Hillebrand (1958) Cerite from Mountain Pass, San Bernardino County, California. Amer. Mineral., 43, 460-475. (5) Moore, P.B. and J. Shen (1983) Cerite, $RE_9(Fe^{3+}, Mg)(SiO_4)_6(SiO_3OH)(OH)_3$: its crystal structure and relation to whitlockite. Amer. Mineral., 68, 996-1003. (6) Atencio, D. and A. de Almeida Azzi (2020) Cerite: a new supergroup of minerals and cerite-(La) renamed ferricerite-(La). Mineral. Mag., 84(6), 928-931.