

Fergusonite-(Ce)**(Ce, La, Y)NbO₄**

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Crystal Data: [Tetragonal.] *Point Group:* [4/m] [by analogy to fergusonite-(Y)].
As prismatic dipyramidal crystals, to 1 mm, and as irregular poikiloblasts, to 1 cm.

Physical Properties: *Fracture:* Conchoidal. *Hardness* = [5.5–6.5] *VHN* = 720–800
D(meas.) = 5.45–5.48 *D*(calc.) = n.d.

Optical Properties: Semitransparent. *Color:* Dark red to black; reddish in transmitted light.
Luster: Adamantine.
Optical Class: Uniaxial (-). $\omega = 2.30$ $\epsilon = 2.20$

Cell Data: *Space Group:* [I4₁/a.] *a* = 5.17 *c* = 5.30 *Z* = [2]

X-ray Powder Pattern: Novopoltavskii massif, Russia.
3.1 (10), 1.882 (9), 1.631 (5), 1.566 (4), 2.60 (3), 3.5 (2), 2.76 (2)

Chemistry:

	(1)
U ₃ O ₈	1.11
Nb ₂ O ₅	42.01
Ta ₂ O ₅	1.00
TiO ₂	0.05
ThO ₂	0.88
RE ₂ O ₃	52.26
Fe ₂ O ₃	0.13
CaO	0.81
H ₂ O	1.79
Total	[100.04]

(1) Novopoltavskii massif, Russia; original total given as 99.94%; RE = La 12%, Ce 34%, Pr 4%, Nd 21%, Sm 3%, Eu 0.5%, Gd 5%, Tb 0.2%, Dy 1.7%, Ho 0.3%, Er 2%, Tm 0.1%, Yb 1.6%, Y 11.6%; corresponds to [(Ce, La, Y)_{0.96}Ca_{0.04}Th_{0.01}]_{Σ=1.01}(Nb_{0.98}Ta_{0.02})_{Σ=1.00}O_{4.00} • 0.30H₂O.

Polymorphism & Series: Dimorphous with fergusonite-beta-(Ce).

Occurrence: In a carbonatite (Novopoltavsk massif, Russia); in magnesium-rich skarn of the outer granite contact zone of a carbonatite-derived dolomitic marble (Bayan Obo, China).

Association: Magnetite, phlogopite, graphite, chlorite, quartz, pyrite, columbite, allanite, bastnäsite, parisite, apatite, uranpyrochlore, aeschynite, fersmite, monazite, calcite, dolomite (Novopoltavsk massif, Russia).

Distribution: In the Chernigovskaya zone, Novopoltavskii massif, Azov Sea area, Ukraine. From the eastern Bayan Obo Fe–Nb–RE deposit, 130 km north of Baotou, Inner Mongolia, China. On Granite Mountain, near Little Rock, Pulaski Co., Arkansas, USA.

Name: For its relation to *fergusonite*-(Y), and its dominant *cerium* content.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 79595.

References: (1) Kapustin, Y.L. (1976) New occurrence of accessory cerium fergusonite in carbonatites. *Trudy Mineral. Muzeya Akad. Nauk SSSR*, 25, 166–172 (in Russian). (2) (1977) *Chem. Abs.*, 87, 152 (abs. ref. 1). (3) Kapustin, Y.L. (1986) Rare-earth mineralization in late carbonatites of the Novopoltavsk Massif. *Novye Dannye Mineral.*, 33, 43–52 (in Russian). (4) (1989) *Amer. Mineral.*, 74, 946 (abs. ref. 3). (5) Peishan Zhang and Pejie Tao (1987) Characteristics of the fergusonite- and aeschynite-group minerals in China. *Zhongguo Xitu Xuebao*, 5(1), 1–7 (in Chinese). (6) (1987) *Chem. Abs.*, 107, 241 (abs. ref. 5).

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