

Mendeleevite-(Ce) $(\text{Cs}, \square)_6(\square, \text{Cs})_6(\square, \text{K})_6(\text{REE}, \text{Ca}, \square)_{30}(\text{Si}_{70}\text{O}_{175})(\text{H}_2\text{O}, \text{OH}, \text{F}, \square)_{35}$

Crystal Data: Cubic. *Point Group:* $2/m \bar{3}$. As well-formed cubic crystals to $30 \mu\text{m}$.

Physical Properties: *Cleavage:* None. *Fracture:* Conchoidal. *Tenacity:* Brittle.
Hardness = 5-5.5 VHN = 613 (50 g load). D(meas.) = 3.12(2) D(calc.) = 3.07

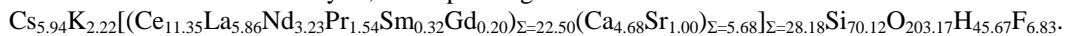
Optical Properties: Transparent. *Color:* Colorless to clear tea color. *Streak:* White.
Luster: Vitreous.
Optical Class: Isotropic. $n = 1.578(2)$

Cell Data: *Space Group:* $Pm\bar{3}$. $a = 21.9148(4)$ $Z = 2$

X-ray Powder Pattern: Darai-Pioz alkaline massif, Tajikistan.
10.95 (100), 3.097 (50), 3.46 (40), 3.068 (40), 2.190 (30)

Chemistry:	(1)	(1)	
SiO_2	43.52	CaO	2.71
Ce_2O_3	19.24	SrO	1.07
La_2O_3	9.87	Cs_2O	8.64
Nd_2O_3	5.62	K_2O	1.08
Pr_2O_3	2.63	F	1.34
Sm_2O_3	0.58	H_2O	[4.25]
Gd_2O_3	0.38	$-\text{O}=\text{F}$	0.56
		Total	100.37

(1) Darai-Pioz alkaline massif, Tajikistan; average of 10 electron microprobe analyses, H_2O and OH calculated from structure analysis, corresponding to



Occurrence: In a massif composed of a variety of granitic, alkaline granitic and syenitic pegmatites, various hydrothermal rocks (albitites, fenites) and carbonatites.

Association: Pectolite, and subordinate amounts of quartz, aegirine, fluorite, sogdianite, stillwellite-(Ce), reedmergnerite, leucosphenite, aegirine, polylithionite, microcline, pyrochlore, turkestanite, hyalotecite, sokolovaite, kirchhoffite, pekovite, neptunite, zerafshanite.

Distribution: In glacial moraine, upper reaches of the Darai-Pioz River, near the junction of the Turkestan, Zeravshan, and Alai ridges, Darai-Pioz alkaline massif, Garm District, Tajikistan.

Name: Honors Dmitriy Ivanovich Mendeleev (1834-1907), the Russian chemist who among other accomplishments created the Periodic Table of Elements.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia (3921/1).

References: (1) Pautov, L.A., A.A. Agakhanov, V.Yu. Karpenko, E.V. Sokolova, and F.C. Hawthorne (2013) Mendeleevite-(Ce), $\text{Cs}_6(\text{REE}_{22}\text{Ca}_6)(\text{Si}_{70}\text{O}_{175})(\text{OH}, \text{F})_{14}(\text{H}_2\text{O})_{21}$, a new mineral from the Darai-Pioz massif, Tajikistan. Doklady Akademii Nauk, 452(4), 441-444 (in Russian). English translation: Doklady Earth Sciences, 452(2) 1023-1026. (2) Sokolova, E., F.C. Hawthorne, L.A. Pautov, A.A. Agakhanov, and V.Yu. Karpenko (2011) The crystal structure and crystal chemistry of mendeleevite-(Ce), $(\text{Cs}, \square)_6(\square, \text{Cs})_6(\square, \text{K})_6(\text{REE}, \text{Ca}, \square)_{30}(\text{Si}_{70}\text{O}_{175})(\text{H}_2\text{O}, \text{OH}, \text{F}, \square)_{35}$, a potential microporous material. Mineralogical Magazine, 75(5), 2583-2596. (3) (2014) Amer. Mineral., 99, 871-872 (abs. refs. 1 and 2).