Radekškodaite-(Ce) $(CaCe_5)(Al_4Fe^{2+})[Si_2O_7][SiO_4]_5O(OH)_3$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As isolated anhedral grains to 2 mm, intimately intergrown with ferriperbøeite-(La).

Physical Properties: *Cleavage*: One good direction and one imperfect direction. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = ~6.5 VHN = 800-922, 862 average (150 g load). D(meas.) = n.d. D(calc.) = 4.651

Optical Properties: Translucent. *Color*: Greenish brown. *Streak*: Brown. *Luster*: Vitreous. *Optical Class*: Biaxial (+). α = 1.798(6) β = 1.806(6) γ = 1.833(8) 2V(meas.) = 65(10)° 2V(calc.) = 58° *Pleochroism*: Weak, marsh green hues. *Absorption*: $Z > Y > X$. *Dispersion*: Weak, $r < v$.

Cell Data: *Space Group*: $P2_1/m$. a = 8.9702(4) b = 5.7044(2) c = 25.164(1) β = 116.766(6)° Z = 2

X-ray Powder Pattern: Mochalin Log *REE* deposit, Chelyabinsk Oblast', South Urals, Russia. 3.031 (100), 3.528 (99), 2.654 (87), 4.640 (76), 2.844 (46), 8.08 (42), 22.5 (38)

Chemistry:

	(1)	(2)		(1)	(2)
CaO	2.74	3.50	MnO	0.69	
La_2O_3	22.23		FeO	2.76	4.49
Ce_2O_3	24.30	51.29	Fe_2O_3	2.57	
Pr_2O_3	1.48		TiO_2	0.04	
Nd_2O_3	3.18		SiO_2	26.10	26.28
ThO_2	0.24		F	0.09	
MgO	1.04		H_2O	1.63	1.69
Al_2O_3	10.84	12.75	–O = F	0.04	.
			Total	99.89	100.00

(1) Mochalin Log *REE* deposit, Chelyabinsk Oblast', South Urals, Russia; average electron microprobe and Raman spectroscopic analyses, FeO:Fe_2O_3 for charge balance, H_2O from stoichiometry; corresponds to $(Ca_{0.79}Mn_{0.16}Th_{0.01}Ce_{2.39}La_{2.20}Nd_{0.30}Pr_{0.14})_{\Sigma=5.99}(Al_{3.43}Fe^{2+}_{0.62}Fe^{3+}_{0.52}Mg_{0.42}Ti_{0.01})_{\Sigma=5.00}Si_{7.00}O_{28}[(OH)_{2.92}F_{0.08}]$. (2) $(CaCe_5)(Al_4Fe^{2+})[Si_2O_7][SiO_4]_5O(OH)_3$.

Occurrence: In polymineralic *REE*-bearing nodules composed mainly of allanite-ferriallanite, bastnäsite, fluorbritholite-(Ce), törnebohmite.

Association: Albite, alexkuznetsovite-(Ce), alexkuznetsovite-(La), biraite-(Ce), cerianite-(Ce), *REE*-bearing epidote, ferriperbøeite-(Ce), heulandite-Ca, hollandite, lanthanite-(La), monazite, nontronite, perbøeite, perrierite, rhabdophane-(La), thorianite, thorite.

Distribution: From dump no. 2, Mochalin Log *REE* deposit, 14 km north of Kyshtym, Chelyabinsk Oblast', South Urals, Russia.

Name: The suffix identifies the *Ce* analogue of *radekškodaite*-(La). The root name honors Czech mineralogist *Radek Škoda* (b. 1979), Associate Professor, Masaryk University, Brno, Czech Republic.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5363/1; 96698).

References: (1) Kasatkin, A.V., N.V. Zubkova, I.V. Pekov, N.V. Chukanov, D.A. Ksenofontov, A.A. Agakhanov, D.I. Belakovskiy, Y.S. Polekhovsky, A.M. Kuznetsov, S.N. Britvin, D.Y. Pushcharovsky, and F. Nestola (2020) The mineralogy of the historical Mochalin Log REE deposit, South Urals, Russia. Part II. Radekškodaite-(La), $(CaLa_5)(Al_4Fe^{2+})[Si_2O_7][SiO_4]_5O(OH)_3$ and radekškodaite-(Ce), $(CaCe_5)(Al_4Fe^{2+})[Si_2O_7][SiO_4]_5O(OH)_3$, two new minerals with a novel structure-type belonging to the epidote-törnebohmite polysomatic series. Mineral. Mag., 84, 839-853.