Radekškodaite-(La) $(CaLa_5)(Al_4Fe^{2+})[Si_2O_7][SiO_4]_5O(OH)_3$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As isolated anhedral grains to 0.75 mm.

Physical Properties: *Cleavage*: Good on {100}, one imperfect. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = ~6.5 VHN = 804-919, 871 average (150 g load). D(meas.) = n.d. D(calc.) = 4.644 Nonfluorescent.

Optical Properties: Translucent. *Color*: Greenish brown, dark gray in reflected light. *Streak*: Brown. *Luster*: Vitreous.
Optical Class: Biaxial (+). α = 1.790(7) β = 1.798(5) γ = 1.825(8) 2V(meas.) = 60(10)° 2V(calc.) = 58° *Pleochroism*: Weak, marsh green to brownish hues. *Absorption*: $Z > Y > X$. *Dispersion*: Weak, $r < v$. Weakly anisotropic with whitish internal reflections.
R_1-R_2: (470) 8.4-8.6, (546) 8.4-8.5, (589) 8.3-8.5, (650) 8.3-8.4

Cell Data: *Space Group: P*2_1/*m*. *a* = 8.9604(3) *b* = 5.7268(2) *c* = 25.113(1) β = 116.627(5)° Z = 2

X-Ray Diffraction Pattern: Mochalin Log *REE* deposit, Chelyabinsk Oblast', South Urals, Russia. 2.640 (100), 3.522 (78), 4.661 (65), 3.038 (55), 22.1 (52), 3.010 (45), 2.866 (44)

Chemistry:

	(1)	(2)		(1)	(2)
CaO	3.40	3.52	FeO	2.55	4.50
La_2O_3	27.68	51.11	Fe_2O_3	3.12	
Ce_2O_3	20.39		TiO_2	0.13	
Pr_2O_3	0.94		SiO_2	26.03	26.38
Nd_2O_3	1.71		F	0.10	
ThO_2	0.23		H_2O	[1.62]	1.70
MgO	0.85		–O = F	0.04	.
Al_2O_3	10.35	12.79	Total	99.70	100.00
MnO	0.64				

(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 $(Ca_{0.98}Th_{0.01}La_{2.75}Ce_{2.01}Nd_{0.16}Pr_{0.09})_{\Sigma=6.00}(Al_{3.28}Fe^{3+}_{0.63}Fe^{2+}_{0.57}Mg_{0.34}Mn_{0.15}Ti_{0.03})_{\Sigma=5.00}Si_{7.00}O_{28}[(OH)_{2.91}F_{0.09}]$. (2) $(CaLa_5)(Al_4Fe^{2+})[Si_2O_7][SiO_4]_5O(OH)_3$.

Occurrence: In polymineralic nodules at the Mochalin Log *REE* deposit, typically intergrown with ferriperbøeite-(La).

Association: Allanite-(Ce), allanite-(La), bastnäsite-(Ce), bastnäsite-(La), ferriallanite-(Ce), ferriallanite-(La), ferriperbøeite-(La), fluorbritholite-(Ce), törnebohmite-(Ce), törnebohmite-(La).

Distribution: From the Mochalin Log *REE* deposit, 14 km north of Kyshtym, Chelyabinsk Oblast', South Urals, Russia.

Name: Honors Czech mineralogist *Radek Škoda* (b. 1979), Associate Professor at Masaryk University, Brno, Czech Republic. The suffix indicates the dominant rare earth element.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5267/1; 96279).

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.