

Dissakisite-(La)**CaLa(Al₂Mg)[Si₂O₇][SiO₄]O(OH)**

Crystal Data: Monoclinic. *Point Group:* 2/m. As anhedral pitch-like nodules to 1 cm and as smaller grains.

Physical Properties: *Cleavage:* Imperfect on (001). *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 6.5-7 D(meas.) = 3.79(15) D(calc.) = 3.84 Radioactive. May be metamict.

Optical Properties: Translucent. *Color:* Black to very dark brown, pale brown with a greenish tint in thin section. *Streak:* Gray-greenish. *Luster:* Pitch-like to vitreous.

Optical Class: Biaxial (+). $\alpha = 1.7395(25)$ $\beta = 1.7434(25)$ $\gamma = 1.7495(25)$ $2V\gamma(\text{meas.}) = 77.0(1)^\circ$ $2V\gamma(\text{calc.}) = 77.5^\circ$ *Pleochroism:* Weak, X = light brown, Y = Z = greenish pale brown.

Dispersion: Medium, $r < v$. *Orientation:* $Y \parallel \beta$, $X \wedge \gamma = 33(3)^\circ$.

Cell Data: *Space Group:* $P2_1/m$. $a = 8.9616(7)$ $b = 5.7265(5)$ $c = 10.2353(9)$ $\beta = 115.193(6)^\circ$ $Z = 2$

X-ray Powder Pattern: Mt. Hochwart, Ulten Valley, Eastern Italian Alps, Italy. 2.926 (100), 2.860 (53), 2.553 (51), 3.526 (49), 2.699 (44), 2.714 (41), 2.623 (38)

Chemistry:	(1)	(1)	(1)
SiO ₂	32.41	La ₂ O ₃	9.31
P ₂ O ₅	0.10	Ce ₂ O ₃	7.83
ThO ₂	4.29	Pr ₂ O ₃	0.56
UO ₂	0.14	Nd ₂ O ₃	1.15
TiO ₂	0.44	Sm ₂ O ₃	0.06
Al ₂ O ₃	17.02	Gd ₂ O ₃	0.03
Cr ₂ O ₃	2.05	Er ₂ O ₃	0.05
Sc ₂ O ₃	0.02	FeO	3.19
V ₂ O ₃	0.11	Fe ₂ O ₃	[2.31]
Ga ₂ O ₃	0.02	CaO	12.18
		MnO	0.11
		MgO	4.55
		SrO	0.18
		NiO	0.14
		ZnO	0.22
		Na ₂ O	0.01
		F	0.03
		H ₂ O	[1.62]
		<u>-O = F</u>	<u>0.01</u>
		Total	100.11

(1) Mt. Hochwart, Ulten Valley, Eastern Italian Alps, Italy; average electron microprobe and SIMS analyses supplemented by Raman spectroscopy, Fe₂O₃ and H₂O calculated from stoichiometry; corresponds to (Ca_{1.195}Mn_{0.009}Sr_{0.010}Na_{0.002}Th_{0.090}U_{0.003}La_{0.315}Ce_{0.262}Pr_{0.019}Nd_{0.038}Sm_{0.002}Gd_{0.001}Er_{0.001})(Al_{1.816}Mg_{0.622}Fe²⁺_{0.244}Fe³⁺_{0.159}Cr_{0.148}Ti_{0.030}Sc_{0.002}V_{0.008}Ga_{0.001}Ni_{0.010}Zn_{0.015})(Si_{2.970}Al_{0.022}P_{0.008})O_{11.991}F_{0.009}(OH).

Mineral Group: Epidote group.

Occurrence: By hydration and enrichment in LILE and LREE of a garnet-bearing peridotite body, in relation to HP-migmatization of the surrounding gneisses during an orogeny.

Association: Olivine, spinel, amphiboles, clino- and orthopyroxenes, clinocllore, uraninite, thorite, thorianite, phlogopite, zircon, apatite, calcite, dolomite, pentlandite, copper sulfides.

Distribution: At the toe of a gully cutting the northern wall of Mt. Hochwart, Ulten Valley, Eastern Italian Alps, Italy.

Name: The suffix, *La*, indicates the lanthanum analog of *dissakisite*-(Ce).

Type Material: National Natural History Museum, Paris, France (MNHN 203.133) and the Mineralogy Museum, University of Padova, Italy (N.INV.1339).

References: (1) Tumiati, S., G. Godard, S. Martin, P. Nimis, V. Mair, and B. Boyer (2005) Dissakisite-(La) from the Ulten zone peridotite (Italian Eastern Alps): A new end-member of the epidote group. *Amer. Mineral.*, 90, 1177-1185. (2) Lavina, B., S. Carbonin, U. Russo, and S. Tumiati (2006) The crystal structure of dissakisite-(La) and structural variations after annealing of radiation damage. *Amer. Mineral.*, 91, 104-110.