Kozoite-(La) $La(CO_3)(OH)$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m.* As radially fibrous, smooth, spherical aggregates to 1 mm; concentrically zoned chemically with kozoite-(Nd).

Physical Properties: *Cleavage:* n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.16 Readily soluble with effervescence in dilute HCl.

Optical Properties: Transparent. *Color*: Extremely pale purple to white. *Streak*: White. *Luster*: Vitreous.
Optical Class: n.d. *n*(calc.) = 1.730

Cell Data: *Space Group*: *Pmcn*. *a* = 4.986(4) *b* = 8.513(6) *c* = 7.227(10) Z = 4

X-ray Powder Pattern: Mitsukoshi, Hizen-cho, Saga Prefecture, Japan.
4.31 (100), 3.69 (72), 2.93 (57), 2.33 (50), 2.06 (48), 1.994 (35), 5.54 (32)

Chemistry:

	(1)	(2)
La_2O_3	35.55	75.45
Pr_2O_3	4.68	
Nd_2O_3	17.60	
Sm_2O_3	1.15	
Gd_2O_3	1.49	
Dy_2O_3	0.09	
Er_2O_3	0.04	
Y_2O_3	3.88	
CaO	6.30	
SrO	1.36	
CO_2	[23.17]	20.38
H_2O	[5.8]	4.71
Total	101.19	100.00

(1) Mitsukoshi, Hizen-cho, Saga Prefecture, Japan; average of 4 electron microprobe analyses supplemented by FTIR spectroscopy, H_2O and CO_2 calculated; corresponding to $(La_{0.83}Nd_{0.40}Y_{0.13}Pr_{0.11}Sm_{0.03}Gd_{0.03})_{\Sigma=1.53}(Ca_{0.43}Sr_{0.05})_{\Sigma=0.48}(CO_3)_2(OH)_{1.52}\cdot 0.48H_2O$. (2) $La(CO_3)(OH)$.

Mineral Group: Ancylite group.

Occurrence: In cavities in an alkali olivine basalt lava flow.

Association: Kozoite-(Nd), lanthanite-(Nd), kimuraite-(Y), lokkaite-(Y), calcite, aragonite, opal (variety hyalite).

Distribution: From Mitsukoshi, Hizen-cho, Saga Prefecture, Japan.

Name: A suffix indicates the La-dominant analogue of *kozoite*-(Nd), which honors Professor Kozo Nagashima (1925-1985).

Type Material: National Science Museum, Tokyo, Japan (NSM-M28310).

References: (1) Miyawaki, R., S. Matsubara, K. Yokoyama, S. Iwano, K. Hamasaki, and I. Yukinori (2003) Kozoite-(La), $La(CO_3)(OH)$, a new mineral from Mitsukoshi, Hizen-cho, Saga Prefecture, Japan. J. Mineral. Petrol. Sci., 98, 137-141. (2) (2004) Amer. Mineral., 89(5-6), 894-895 (abs. ref. 1).