Kozoite-(Nd) $Nd(CO_3)(OH)$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As tabular aggregates or rhombic dipyramidal crystals to 10 μm.

Physical Properties: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 4.77 Readily soluble with effervescence in dilute HCl.

Optical Properties: Translucent. *Color*: Pale pinkish purple to white. *Streak*: n.d. *Luster*: Vitreous to dull.
Optical Class: Biaxial. α = 1.698(2) γ = 1.780(5)

Cell Data: *Space Group*: *Pmcn*. a = 4.9829(1) b = 8.5188(2) c = 7.2570(2) Z = 4

X-ray Powder Pattern: Niikoba, Hizen-cho, Higashi Matsuura-gun, Saga Prefecture, Japan.
4.29 (100), 2.93 (89), 2.333 (78), 2.060 (78), 1.994 (75), 3.69 (72), 2.640 (59)

Chemistry:

	(1)	(2)
La_2O_3	21.39	
Ce_2O_3	0.26	
Pr_2O_3	6.25	
Nd_2O_3	30.66	76.04
Sm_2O_3	5.39	
Eu_2O_3	1.84	
Gd_2O_3	2.99	
Tb_2O_3	0.11	
Dy_2O_3	0.24	
Y_2O_3	0.70	
CaO	0.49	
CO_2	21.10	19.89
H_2O	5.44	4.07
Total	96.86	100.00

(1) Niikoba, Hizen-cho, Higashi Matsuura-gun, Saga Prefecture, Japan; average electron microprobe and CHN analyses supplemented by FTIR spectroscopy; corresponding to $(Nd_{0.85}La_{0.61}Pr_{0.18}Sm_{0.14}Gd_{0.08}Eu_{0.05}Ca_{0.04}Y_{0.03}Ce_{0.01}Dy_{0.01})_{\Sigma=2}C_{2.24}H_{2.82}O_{8.88}$. (2) $Nd(CO_3)(OH)$.

Polymorphism & Series: Dimorphous with hydroxylbastnäsite-(Nd).

Mineral Group: Ancylite group.

Occurrence: By post-magmatic hydrothermal activity in cavities and fissures in alkali olivine basalt.

Association: Kozoite-(Nd), lanthanite- (Nd), lanthanite- (La), kimuraite-(Y).

Distribution: From Niikoba, Hizen-cho, Higashi Matsuura-gun, Saga Prefecture, Japan.

Name: Honors *Kozo* Nagashima (1925-1985), a Japanese chemist, for his contributions to the mineralogy, chemistry, and crystallography of rare earth minerals.

Type Material: National Science Museum, Tokyo, Japan (NSM-M27940).

References: (1) Miyawaki, R., S. Matsubara, K. Yokoyama, K. Takeuchi, Y. Terada, and I. Nakai (2000) Kozoite-(Nd), $Nd(CO_3)(OH)$, a new mineral in an alkali olivine basalt from Hizen-cho, Saga Prefecture, Japan. Amer. Mineral., 85(7-8), 1076-1081. (2) Tahara, T., I. Nakai, R. Miyawaki, and S. Matsubara (2007) Crystal chemistry of $RE(CO_3)OH$. Zeitschrift Kristal., 222, 326-334.