Gadolinite-(Ce) $(Ce, La, Nd, Y)_2Fe^{2+}Be_2Si_2O_{10}$

Crystal Data: Metamict; monoclinic after recrystallization. *Point Group:* $2/m$. As irregular highly-fractured masses, to 2 cm.

Physical Properties: *Fracture:* Conchoidal. Hardness = [6.5–7] (by analogy to the gadolinite group). D(meas.) = 4.20 D(calc.) = 4.90

Optical Properties: Translucent. *Color:* Black; in thin section, olive-green.
Luster: Vitreous.
Optical Class: Isotropic. $n = 1.78$

Cell Data: *Space Group:* $P2/c$ after recrystallization by heating at 700 °C. $a = 4.82(2)$ $b = 7.58(2)$ $c = 10.01(3)$ $\beta = 90°28(16)'$ Z = [2]

X-ray Powder Pattern: Buer, Norway; hydrothermally recrystallized at 700 °C and 2 kb for 48 hours. (ICDD 29-1409).
2.88 (100), 4.81 (90), 2.60 (80), 2.59 (80), 3.18 (70), 3.00 (70), 3.59 (60)

Chemistry:

	(1)		(1)
SiO_2	23.17	FeO	10.03
TiO_2	0.14	MnO	1.33
B_2O_3	0.55	BeO	8.83
Al_2O_3	0.05	MgO	0.33
Y_2O_3	6.78	CaO	2.67
La_2O_3	14.00	Na_2O	0.10
Ce_2O_3	21.25	K_2O	0.53
RE_2O_3	12.05	Total	[101.81]

(1) Buer, Norway; by a combination of wet chemical analysis, electron microprobe, and emission spectroscopy; $RE_2O_3 = Pr_2O_3$ 2.95%, Nd_2O_3 4.36%, Sm_2O_3 0.39%, Eu_2O_3 0.07%, Gd_2O_3 0.92%, Tb_2O_3 0.29%, Dy_2O_3 1.01%, Ho_2O_3 0.39%, Er_2O_3 0.76%, Tm_2O_3 0.13%, Yb_2O_3 0.65%, Lu_2O_3 0.13%; corresponds to $(Ce_{0.68}La_{0.45}Y_{0.32}RE_{0.71})_{\Sigma=2.16}(Fe^{2+}_{0.74}Mn_{0.10}Mg_{0.04}Ti_{0.01})_{\Sigma=0.89}(Be_{1.86}B_{0.08}Al_{0.01})_{\Sigma=1.95}Si_{2.04}O_{10}$.

Mineral Group: Gadolinite group.

Occurrence: In syenite pegmatite veins along a contact between basalt and monzonite.

Association: Aegirine, pyrochlore, zircon, apatite, titanite, pyrophanite, magnetite, loparite, chevkinite, biotite, microcline, helvite, molybdenite, albite, apophyllite, quartz, calcite.

Distribution: From a dump at Buer, nine km southeast of Skien, Bjørkedalen region, and in the Bakken quarry, Tvedalen, Norway.

Name: For its *cerium* content and relation to *gadolinite*-(Y).

Type Material: n.d.

References: (1) Segalstad, T.V. and A.O. Larsen (1978) Gadolinite-(Ce) from Skien, southwestern Oslo region, Norway. Amer. Mineral., 63, 188–195.