Shabaite-(Nd) $Ca(Nd,Y,Sm)_2(UO_2)(CO_3)_4(OH)_2 \cdot 6H_2O$

Crystal Data: Monoclinic. *Point Group:* $2/m$, m or 2. Crystals are rounded micaceous plates, flattened on {010} and elongated along [100], in rosettes, to 5 mm. *Twinning:* On {001}.

Physical Properties: *Cleavage:* Perfect on {010}. Hardness = 2.5 D(meas.) = 3.13(10) D(calc.) = 3.23 Radioactive.

Optical Properties: Translucent to opaque. *Color:* Pale greenish yellow, pale green; very pale yellow in transmitted light. *Luster:* Pearly.
Optical Class: Biaxial (–). *Orientation:* $Y = b$; $Z \wedge a = 3°–4°$. $\alpha = 1.534(2)$ $\beta = [1.590(4)]$ $\gamma = 1.600(2)$ 2V(meas.) = 44°

Cell Data: *Space Group:* $P2/m$, Pm, or $P2$. $a = 9.208(5)$ $b = 32.09(3)$ $c = 8.335(4)$ $\beta = 90.3(1)°$ Z = 5

X-ray Powder Pattern: Kamoto-East mine, Congo.
15.9 (100), 7.31 (70), 4.17 (70), 3.072 (60b), 4.58 (50), 4.01 (30), 9.20 (20)

Chemistry:

	(1)
UO_3	30.32
CO_2	18.92
Y_2O_3	4.91
La_2O_3	1.50
Ce_2O_3	0.50
Pr_2O_3	2.36
Nd_2O_3	13.58
Sm_2O_3	5.54
Dy_2O_3	2.96
CaO	5.99
H_2O	13.49
Total	100.07

(1) Kamoto-East mine, Congo; by electron microprobe, average of ten analyses, CO_2, H_2O by gas chromatography; corresponds to $Ca_{1.01}(Nd_{0.76}Y_{0.42}Sm_{0.30}Dy_{0.14}Pr_{0.14}La_{0.08}Ce_{0.04})_{\Sigma=1.88}(UO_2)_{1.00}(CO_3)_{4.08}(OH)_{1.50} \cdot 5.57H_2O$.

Occurrence: A very rare secondary mineral in the oxidized zone of a uranium-bearing Cu–Co deposit.

Association: Uraninite, uranophane, kamotoite-(Y), astrocyanite-(Ce), françoisite-(Nd), schuilingite-(Nd), masuyite.

Distribution: From the Kamoto-East Cu–Co mine, five km west of Kolwezi, Katanga Province, Congo (Shaba Province, Zaire).

Name: For Shaba, a former name of Katanga Province, Congo.

Type Material: Royal Belgian Institute of Natural Sciences, Brussels, Belgium, RC3511.

References: (1) Deliens, M. and P. Piret (1989) La shabaïte-(Nd), $Ca(TR)_2(UO_2)(CO_3)_4(OH)_2.6H_2O$, nouvelle espèce minérale de Kamoto, Shaba, Zaïre. Eur. J. Mineral., 1, 85–88 (in French with English abs.). (2) (1990) Amer. Mineral., 75, 433–434 (abs. ref. 1).