Gramaccioliite-(Y) $(Pb,Sr)(Y,Mn)(Ti,Fe^{3+})_{18}Fe^{3+}_2O_{38}$

Crystal Data: Hexagonal. *Point Group*: $\bar{3}$. As thin tabular crystals with a hexagonal outline to 3 mm.

Physical Properties: *Cleavage*: None. *Fracture*: Conchoidal. *Tenacity*: Brittle. Hardness = n.d. D(meas.) = n.d. D(calc.) = 4.66

Optical Properties: Opaque. *Color*: Black. *Streak*: Black. *Luster*: Metallic. *Optical Class*: n.d. *Anisotropism*: Weak.
R_{air}-R_{oil}: (470) 19.2-6.7, (546) 17.9-5.9, (589) 17.6-5.7, (650) 17.4-5.8

Cell Data: *Space Group*: $R\bar{3}$. a = 10.411(3) c = 20.97(3) Z = 3

X-ray Powder Pattern: Sambuco di Vinadio, Stura Valley, Piedmont, Italy.
3.002 (100), 1.606 (95), 2.892 (70), 2.258 (70), 1.809 (60), 2.852 (50), 2.434 (50)

Chemistry:

	(1)		(1)
K_2O	0.01	La_2O_3	0.14
PbO	7.53	Ce_2O_3	0.70
BaO	0.19	Nd_2O_3	0.20
SrO	1.56	UO_2	0.33
ZnO	0.99	TiO_2	59.47
MnO	1.45	Nb_2O_5	0.32
CaO	0.12	V_2O_5	0.22
Fe_2O_3	24.14	Total	100.40
Y_2O_3	3.03		

(1) Sambuco di Vinadio, Piedmont, Italy; average of 10 electron microprobe analyses supplemented by IR spectroscopy; corresponding to $(Pb_{0.61}Sr_{0.27}Ba_{0.02}U_{0.02})_{\Sigma=0.93}(Y_{0.49}Mn_{0.37}Ce_{0.08}Ca_{0.04}Nd_{0.02}La_{0.02})_{\Sigma=1.01}(Ti_{13.53}Fe_{5.49}Zn_{0.22}V_{0.04}Nb_{0.04})_{\Sigma=19.33}O_{38}$.

Mineral Group: Crichtonite group.

Occurrence: In hydrothermal quartz veins cutting biotite gneiss (Italy); in metamorphosed bodies of brecciated bauxite and marble (Greece).

Association: Quartz, albite, muscovite, anatase, brookite, rutile, fluorapatite, xenotime, pyrite, a mineral of the synchysite series, dessauite-(Y), senaite (Italy); diaspore, hematite, muscovite, chloritoid, calcite, rutile, monazite-(Ce), bastnäsite-(La), parisite-(Ce) (Greece).

Distribution: At Sambuco di Vinadio, Stura Valley, Piedmont, Italy and from Mikri Lakka, eastern coast of Samos Island , Greece.

Name: Honors Professor Carlo Maria *Gramaccioli* (b. 1935), University of Milan, Italy and a suffix to designate the dominant rare earth element, *Y*ttrium.

Type Material: At the Natural History Museum, University of Pisa, Italy (# 18299).

References: (1) Orlandi, P., M. Pasero, N. Rotiroti, F. Olmi, F. Demartin, and Y. Moëlo (2004) Gramaccioliite-(Y), a new mineral of the crichtonite group from Stura Valley, Piedmont, Italy. Eur. J. Mineral., 16, 171-175. (2) (2004) Amer. Mineral., 89, 1827 (abs. ref. 1). (3) Theye, T., F. Hatert, E. Ockenga, C. Bertoldi, and C. Lathe (2010) Gramaccioliite-(Y): paragenesis chemistry, and structure in a new occurrence, Samos Island, Greece. Eur. J. Mineral., 22, 443-452.