Minasgeraisite-(Y) $Ca(Y,Bi)_2Be_2Si_2O_{10}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As curved, sheaflike crystals, to < 5 μm, forming single and multiple rosettes, to 1 mm.

Physical Properties: *Cleavage:* Perfect on probable {100}; good on {001}. Hardness = 6–7 D(meas.) = > 4.25 D(calc.) = 4.90

Optical Properties: Translucent. *Color:* Lavender to lilac-purple, with individual rosettes having lighter-colored cores than rims; in transmitted light, colorless to pale yellow or purple. *Streak:* Light purple. *Luster:* Earthy to subvitreous.
Optical Class: Biaxial (+). *Pleochroism:* Moderate; X = colorless; Y = pale grayish yellow; Z = lavender-purple. *Dispersion:* $r > v$, very weak. $\alpha = 1.740(4)$ $\beta = 1.754(4)$ $\gamma = 1.786(4)$ 2V(meas.) = 50°–72°, average 68° 2V(calc.) = 68°

Cell Data: *Space Group:* $P2_1/a$. $a = 9.833(2)$ $b = 7.562(1)$ $c = 4.702(1)$ $\beta = 90.46(6)°$ Z = 2

X-ray Powder Pattern: José Pinto pegmatite, Brazil.
3.11 (100), 2.830 (100), 2.540 (90), 1.768 (35), 5.99 (30), 3.71 (30), 3.41 (30)

Chemistry:

	(1)	(2)		(1)	(2)
SiO_2	[26.37]	24.5	MnO	2.83	3.5
TiO_2	0.02	0.0	CuO	0.14	0.1
ZrO_2	< 0.02	0.0	ZnO	0.35	0.3
B_2O_3	1.45	1.5	BeO	7.8	7.8
Al_2O_3	0.00	0.0	MgO	0.61	0.6
Y_2O_3	16.38		CaO	11.47	8.1
RE_2O_3	15.78	23.1	Na_2O	< 0.1	< 0.1
Bi_2O_3	14.7	28.5	P_2O_5	1.21	1.2
FeO	0.69	0.7	Total	[99.8]	99.9

(1) José Pinto pegmatite, Brazil; by electron microprobe, ICP, and AA, after deduction of SiO_2 0.6% as mica; $RE_2O_3 = La_2O_3$ 0.25%, Ce_2O_3 0.20%, Pr_2O_3 0.13%, Nd_2O_3 0.50%, Sm_2O_3 0.26%, Eu_2O_3 0.00%, Gd_2O_3 0.32%, Tb_2O_3 0.23%, Dy_2O_3 1.26%, Ho_2O_3 0.37%, Er_2O_3 1.94%, Tm_2O_3 0.75%, Yb_2O_3 7.86%, Lu_2O_3 1.71%; corresponds to $(Ca_{0.45}Mn_{0.20}Mg_{0.08}Fe_{0.05}Zn_{0.02}Cu_{0.01})_{\Sigma=0.81}(Y_{0.72}Ca_{0.56}RE_{0.41}Bi_{0.31})_{\Sigma=2.00}(Be_{1.55}Si_{0.24}B_{0.21})_{\Sigma=2.00}(Si_{1.95}P_{0.08})_{\Sigma=2.03}O_{10}$. (2) Do.; Bi-richest portion, with $(RE_{0.86}Bi_{0.65}Ca_{0.49})_{\Sigma=2.00}$.

Mineral Group: Gadolinite group.

Occurrence: A late-stage accessory mineral in a zoned complex granite pegmatite.

Association: Milarite, muscovite, quartz, albite, orthoclase, hematite, garnet, magnetite, churchite, elbaite, anatase.

Distribution: In the José Pinto pegmatite, at Jaguaraçú, near Coronel Fabriciano, Minas Gerais, Brazil.

Name: For the state of Minas Gerais, Brazil, and *yttrium* in the composition.

Type Material: National Museum of Natural History, Washington, D.C., USA, 164209.

References: (1) Foord, E.E., R.V. Gaines, J.G. Crock, W.B. Simmons, Jr., and C.P. Barbosa (1986) Minasgeraisite, a new member of the gadolinite group from Minas Gerais, Brazil. Amer. Mineral., 71, 603–607.