

Crystal Data: Monoclinic. *Point Group:* $2/m$. As striated prismatic to tabular crystals, to 1 mm, in parallel bundles.

Physical Properties: *Cleavage:* n.d. *Fracture:* Splintery. *Tenacity:* Brittle. Hardness = 3-4
D(meas.) = n.d. D(calc.) = 6.04

Optical Properties: Semitransparent to translucent. *Color:* Red-orange to red-brown. *Streak:* Red. *Luster:* Vitreous to resinous (if altered).

Optical Class: Biaxial (+). $2V_x = 86^\circ$ *Pleochroism:* Strong, $X =$ light greenish brown, $Y =$ brown, $Z =$ reddish brown. *Dispersion:* Strong.

Cell Data: *Space Group:* $P2_1/m$. $a = 7.649(1)$ $b = 6.101(1)$ $c = 8.904(1)$ $\beta = 112.23(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Santa Marta, Badajoz province, Spain.
3.242 (100), 2.980 (48), 2.746 (48), 4.893 (43), 4.166 (34), 3.058 (25), 3.401 (21)

Chemistry:	(1)	(2)
PbO	61.80	62.25
CaO	0.03	
BaO	0.32	
Mn ₂ O ₃	<0.01	
Fe ₂ O ₃	10.12	11.13
CuO	0.67	
ZnO	0.09	
Al ₂ O ₃	0.11	
V ₂ O ₅	23.86	25.36
As ₂ O ₅	0.13	
P ₂ O ₅	0.57	
SiO ₂	0.33	
H ₂ O	1.91	1.26
Total	99.94	100.00

(1) Santa Marta, Badajoz province, Spain; average of 21 electron microprobe analyses, H₂O by DTA and thermogravimetric analysis; corresponds to $(\text{Pb}_{1.950}\text{Ca}_{0.004}\text{Ba}_{0.015})_{\Sigma=1.968}(\text{Fe}^{3+}_{0.892}\text{Cu}_{0.059}\text{Zn}_{0.008}\text{Al}_{0.015})_{\Sigma=0.974}(\text{V}_{1.847}\text{Si}_{0.039}\text{P}_{0.057}\text{As}_{0.008})_{\Sigma=1.950}\text{O}_{7.507}(\text{OH})_{1.493}$. (2) $\text{Pb}_2\text{Fe}^{3+}(\text{VO}_4)_2(\text{OH})$.

Polymorphism & Series: Series with brackebuschite likely.

Mineral Group: Brackebuschite group.

Occurrence: In the upper oxidation zone of Pb-Zn hydrothermal deposits.

Association: Mottramite, descloizite, vanadinite.

Distribution: At Las Colmenitas and Los Llanos mine, 2 km northwest of Santa Marta [TL] and the La Muda mine, Azuaga, Badajoz province, Spain.

Name: Honors Professor Salvador *Calderón*, (1852-1911), for his contributions to the mineralogy of Spain.

Type Material: Mineralogical Museum, Spanish Geological Survey, Madrid, Spain (MGM-7748); Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 83252).

References: (1) González Del Tánago, J., Á. La Iglesia, J. Rius, and S. Frenández Santín (2003) Calderonite, a new lead-iron-vanadate of the brackebuschite group. *Amer. Mineral.*, 88, 1703-1708.