Guimarãesite $Ca_2Be_4Zn_5(PO_4)_6(OH)_4 \cdot 6H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As tabular prismatic crystals in rims (up to 0.1 mm thick) on crystals of roscherite-group minerals.

Physical Properties: *Cleavage*: Perfect on {100}, good on {010} (by analogy in the group). *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = ~4.5 (by analogy) D(meas.) = n.d. D(calc.) = 2.963 Nonfluorescent.

Optical Properties: Transparent. *Color*: Brown, colorless in thin section. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (-). α = 1.596(2) β = 1.600(2) γ = 1.602(2) 2V(meas.) = 55°-75° 2V(calc.) = 70° *Orientation*: *X* = elongation. Nonpleochroic.

Cell Data: *Space Group*: *C*2/*c*. a = 15.98(1) b = 11.84(2) c = 6.63(1) β = 95.15(15)° Z = 2

X-Ray Diffraction Pattern: Near the Piauí river, Itinga county, Minas Gerais, Brazil.
5.98 (100), 9.98 (90), 3.152 (90), 4.82 (80), 2.708 (80), 3.052 (70), 2.961 (70)

Chemistry:

	(1)	(2)
CaO	9.72	9.43
MgO	4.00	
MnO	2.18	
FeO	2.65	
ZnO	19.06	34.22
Al_2O_3	1.70	
BeO	[8.975]	8.41
P_2O_5	38.20	35.81
H_2O	[13.515]	12.12
Total	100.00	100.00

(1) Near the Piauí river, Itinga county, Minas Gerais, Brazil; average electron microprobe analysis, H_2O and BeO calculated; corresponds to $Ca_{1.93}(Zn_{2.61}Mg_{1.11}Fe^{2+}_{0.41}Al_{0.37}Mn_{0.34})_{\Sigma=4.84}Be_{4.00}(PO_4)_{6.00}(OH)_{3.90} \cdot 6.41H_2O$. (2) $Ca_2Zn_5Be_4(PO_4)_6(OH)_4 \cdot 6H_2O$.

Mineral Group: Roscherite group.

Occurrence: A late fracture-filling mineral in a phosphate-rich granite pegmatite.

Association: Albite, microcline, quartz, elbaite, lepidolite, schorl, eosphorite, moraesite, saleeite, zanazziite, an Fe-dominant roscherite-group mineral, opal.

Distribution: From a pegmatite near the Piauí river, Itinga county, Minas Gerais, Brazil.

Name: Honors the Brazilian mineralogist Djalma *Guimarães* (1895-1973).

Type Material: Geology Museum, University of São Paulo, Brazil (DR 591).

References: (1) Chukanov, N.V., D. Atencio, A.E. Zadov, L.A.D. Menezes, and J.M.V. Coutinho (2007) Guimarãesite, a new Zn-dominant monoclinic roscherite-group mineral from Itinga, Minas Gerais, Brazil. New Data on Minerals. 42, 11-15.