

Crystal Data: Monoclinic. *Point Group:* 2/m. As tabular crystals to 130 μm dominated by {100} and striated parallel to [010]; as curved, worm-like aggregates of subparallel crystals to ~1 mm.

Physical Properties: *Cleavage:* Perfect on {100}. *Tenacity:* Brittle. *Fracture:* Irregular. Hardness = 4-5 D(meas.) = 3.15(5) D(calc.) = 3.241 Dissolves slowly in dilute HCl.

Optical Properties: Transparent. *Color:* Greenish black. *Streak:* Olive green. *Luster:* Vitreous. *Optical Class:* Biaxial (+). $a = 1.787(3)$ $\beta = 1.792(3)$ $\gamma = 1.806(3)$ $2V(\text{meas.}) = 60(5)^\circ$ $2V(\text{calc.}) = 62.1^\circ$ *Dispersion:* Moderate, $r < v$. *Pleochroism:* Strong, $X = \text{bluish-green}$, $Z = \text{orange}$, $Y = \text{yellow}$. *Absorption:* $X \gg Z > Y$. *Orientation:* $Y = b$, $X \wedge a = 48^\circ$ in obtuse β .

Cell Data: *Space Group:* C2/c. $a = 25.975(3)$ $b = 5.1766(4)$ $c = 13.929(1)$ $\beta = 111.293(2)^\circ$ $Z = 4$

X-ray Powder Pattern: Gigante pegmatite, Punilla department, Córdoba province, Argentina. 3.179 (100), 3.424 (71), 5.045 (60), 1.585 (50), 2.881 (42), 2.109 (39), 4.147 (37)

Chemistry:	(1)	(2)
TiO ₂	0.12	
Al ₂ O ₃	3.10	
Fe ₂ O ₃	41.95	45.62
MnO	5.97	8.11
MgO	0.08	
CaO	0.23	
ZnO	0.15	
Na ₂ O	3.03	3.54
P ₂ O ₅	32.73	32.44
<u>H₂O</u>	<u>10.31</u>	<u>10.30</u>
Total	97.67	100.00

(1) Gigante pegmatite, Punilla department, Córdoba province, Argentina; average of 28 electron microprobe analyses; H₂O calculated from stoichiometry; corresponds to (Na_{0.85}Ca_{0.02})_{Σ=0.87}(Mn²⁺_{0.74}Fe²⁺_{0.12}Mg_{0.02}Zn_{0.02}Ti⁴⁺_{0.01})_{Σ=0.90}(Fe³⁺_{4.47}Al_{0.53})_{Σ=5.00}(P_{4.03}O₁₆)(OH)₆·2H₂O.

(2) NaMnFe₅(PO₄)₄(OH)₆·2H₂O.

Mineral Group: Dufrenite group.

Occurrence: In vugs in hydrothermal apatite-(CaF) in a zoned granitic pegmatite.

Association: Morinite, natrodufrénite, quartz, apatite-(CaF).

Distribution: From the Gigante granitic pegmatite, 18.45 km west-southwest of Tanti, Punilla department, Córdoba province, Argentina.

Name: Honors Hebe Dina Gay (b. 1927), Professor Emeritus of Mineralogy, National University of Córdoba, Argentina, whose accomplishments include a 60-year career in teaching, research, and since 1971, curation of the University's Alfredo Stelzner Museum of Mineralogy and Geology, one of Argentina's most important geological museums.

Type Material Natural History Museum of Los Angeles County, Los Angeles, California, USA (59843), and the Alfredo Stelzner Museum of Mineralogy and Geology, National University of Córdoba, Argentina (MS003278).

References: (1) Kampf, A.R., F. Colombo, and J.G. del Tánago (2010) Gayite, a new dufrénite-group mineral from the Gigante granitic pegmatite, Córdoba province, Argentina. *Amer. Mineral.*, 95, 386-391.