

Crystal Data: Monoclinic. *Point Group:* 2/m. As flattened prismatic crystals, to 0.3 mm, with resorbed faces. *Twining:* Lamellar twinning on {100}.

Physical Properties: *Cleavage:* Distinct on {010}. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = 6 D(meas.) = > 3.32 D(calc.) = 3.45(2)

Optical Properties: Translucent. *Color:* Pale yellow; colorless in thin section. *Streak:* n.d. *Luster:* Vitreous on cleavage surfaces to greasy on resorbed surfaces. *Optical Class:* Biaxial (-). $\alpha = 1.700$ $\beta = 1.715$ $\gamma = 1.725$ $2V(\text{meas.}) = 80^\circ$ $2V(\text{calc.}) = 78^\circ$ *Dispersion:* Weak, $r < v$. *Orientation:* $Z = b$; $X \wedge c = 45^\circ$.

Cell Data: *Space Group:* $P2_1$. $a = 10.8459(15)$ $b = 10.2260(14)$ $c = 7.2727(10)$
 $\beta = 109.332(3)^\circ$ $Z = 2$

X-ray Powder Pattern: Tantalum Pit, Prairie Lake intrusive complex, Ontario, Canada. 3.04 (S), 2.98 (S), 2.85 (S), 2.02 (S), 3.64 (M), 3.23 (M), 2.48(M)

Chemistry:	(1)
Na ₂ O	7.45
CaO	27.92
MgO	0.14
MnO	0.37
FeO	0.72
TiO ₂	0.94
ZrO ₂	13.80
HfO ₂	0.15
Nb ₂ O ₅	16.01
Ta ₂ O ₅	0.08
SiO ₂	29.68
F	2.54
-O=F	1.07
Total	98.73

(1) Tantalum Pit, Prairie Lake intrusive complex, Ontario, Canada; average of 16 electron microprobe analyses, corresponding to $\text{Na}_{1.930}(\text{Ca}_{3.996}\text{Mn}_{0.042})_{\Sigma=4.038}(\text{Nb}_{0.967}\text{Zr}_{0.899}\text{Ti}_{0.094}\text{Fe}_{0.080}\text{Mg}_{0.028}\text{Hf}_{0.006}\text{Ta}_{0.003})_{\Sigma=2.077}(\text{Si}_{3.965}\text{O}_{14})\text{O}_{2.927}\text{F}_{1.073}$.

Occurrence: A primary mineral in phlogopite-calcite silicocarbonatite emplaced in ijolite.

Association: Calcite, phlogopite, U-rich pyrochlore, titanite.

Distribution: Tantalum Pit, south of Anomaly Lake, Prairie Lake intrusive complex, Thunder Bay district, Ontario, Canada.

Name: Honors Anthony Nicola Mariano (b. 1930) for contributions to the study of alkaline rocks and carbonatites.

Type Material: R.B. Ferguson Museum of Mineralogy, University of Manitoba, Winnipeg, Manitoba, Canada, M 7425.

References: (1) Chakhmouradian, A.R., R.H. Mitchell, P.C. Burns, Y. Mikhailova, and E.P. Reguir (2008) Marianoite, a new member of the cuspidine group from the Prairie Lake silicocarbonatite, Ontario. *Can. Mineral.*, 46, 1023–1032. (2) (2009) *Amer. Mineral.*, 94, 649 (abs. ref. 1).