Magniotriplite $(Mg, Fe^{2+}, Mn^{2+})_2(PO_4)(F, OH)$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As crystals and nodular masses, to 8 cm.

Physical Properties: *Cleavage:* One direction observed under the microscope.
Fracture: Uneven. Hardness = 4 D(meas.) = 3.57 D(calc.) = 3.68

Optical Properties: Translucent. *Color:* Reddish brown, yellow. *Streak:* Pale brown.
Luster: Vitreous to resinous.
Optical Class: Biaxial (+). *Pleochroism:* Weak; X = light yellow to colorless; Y = light yellow; Z = wine-yellow. *Orientation:* $Z = b$; $X \wedge a = 18°$. *Dispersion:* $r > v; r < v$. $\alpha = 1.641$–1.648 $\beta = 1.649$–1.653 $\gamma = 1.661$–1.664 2V(meas.) = 60°

Cell Data: *Space Group:* $I2/a$. $a = 12.035(5)$ $b = 6.432(4)$ $c = 9.799(2)$ $\beta = 108.12(2)°$ Z = 8

X-ray Powder Pattern: Valmy, France; close to wagnerite.
2.864 (100), 3.015 (80), 3.162 (70), 2.794 (60), 3.587 (50), 3.324 (50), 2.576 (30)

Chemistry:

	(1)	(2)		(1)	(2)
P_2O_5	36.52	36.03	CaO	0.00	0.05
SiO_2	2.40		Na_2O	0.00	
TiO_2	0.92	0.30	K_2O	0.00	
Al_2O_3	0.70		F	6.00	6.50
FeO	25.90	31.68	H_2O^+	0.64	1.40
MnO	13.00	8.25	H_2O^-	0.10	
MgO	17.12	18.00	$-O = F_2$	2.52	2.74
			Total	100.78	99.47

(1) Karasu pegmatite, Kyrgyzstan; SiO_2 quartz impurity, corresponds to $(Mg_{0.88}Fe_{0.74}Mn_{0.38})_{\Sigma=2.00}(PO_4)_{1.06}[F_{0.66}(OH)_{0.14}]_{\Sigma=0.80}$. (2) Valmy, France; corresponding to $(Mg_{0.89}Fe_{0.87}Mn_{0.23}Ti_{0.01})_{\Sigma=2.00}(PO_4)[F_{0.68}(OH)_{0.31}]_{\Sigma=0.99}$.

Occurrence: In zoned complex granite pegmatites.

Association: Arrojadite, triphylite, muscovite, albite, quartz (Karasu pegmatite, Kyrgyzstan); vivianite, graftonite (Valmy, France).

Distribution: From the Karasu and Kyrk-Bulak pegmatites, Turkestan Range, Kyrgyzstan. At Hålsjöberget, Värmland, Sweden. From Valmy, Albères massif, Pyrénées-Orientales, France. In the Tip Top mine, 8.5 km southwest of Custer, Custer Co., South Dakota, USA.

Name: As the *magnesium* dominant analog of *triplite*.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 50653–50658.

References: (1) Ginsburg, A.I., N.A. Kruglova, and V.A. Moleva (1951) Magniotriplite – a new mineral of the triplite group. Doklady Acad. Nauk SSSR, 77, 97–100 (in Russian). (2) (1952) Amer. Mineral., 37, 359–360 (abs. ref. 1). (3) Fontan, F. (1981) La magniotriplite ferrifère du massif des Albères (Pyrénées-Orientales, France). Une nouvelle variété. Bull. Minéral., 104, 672–676 (in French with English abs.). (4) Tadini, C. (1981) Magniotriplite: its crystal structure and relation to the triplite-triploidite group. Bull. Minéral., 104, 677–680. (5) Pekov, I.V. (1998) Minerals first discovered on the territory of the former Soviet Union, 134.