Marécottite $Mg_3(UO_2)_4(SO_4)_2O_3(OH)\cdot 28H_2O$

Crystal Data: Orthorhombic. *Point Group:* $mm2$. Crystals, to 4 mm, are flattened on {100}, striated parallel [001], bound by large {010}, {011}, {$2\bar{3}0$}, modified by {230}, {101}, {201}, {301}, {211}, {210}.

Physical Properties: *Cleavage:* Perfect on {100}; imperfect on {010}. Hardness = n.d. D(meas.) = 4.4 D(calc.) = 4.37 Radioactive; dehydrates at ambient temperature.

Optical Properties: Semitransparent. *Color:* Yellowish green to greenish brown. *Optical Class:* Biaxial (–). *Pleochroism:* Y = yellowish green; Z = yellowish brown. *Orientation:* $X = a$; $Y = b$; $Z = c$. α = n.d. β = 1.780–1.785 γ = 1.795–1.800 2V(meas.) = 39° 2V(calc.) = n.d.

Cell Data: *Space Group:* $P2_1bn$. $a = 16.4537(10)$ $b = 17.2229(10)$ $c = 6.9879(4)$ Z = 4

X-ray Powder Pattern: Musonoi mine, Congo.
8.23 (FFF), 3.09 (FFF), 3.22 (FF), 2.900 (FF), 3.02 (F), 8.65 (mF), 4.44 (mF)

Chemistry:

	(1)	(2)
UO_3	60.5	65.82
SeO_2	23.7	17.02
CuO	4.3	6.10
H_2O	10.7	11.06
Total	99.2	100.00

(1) Musonoi Extension mine, Congo; H_2O by the Penfield method., partially dehydrated material approaching a probable composition $Cu(UO_2)_3O_2(SeO_3)_2\cdot 6H_2O$. (2) $Cu(UO_2)_3O_2(SeO_3)_2\cdot 8H_2O$.

Occurrence: A rare alteration product of selenian digenite in the oxidation zone of a uranium-bearing Cu–Co hydrothermal ore deposit.

Association: Digenite, demesmaekerite, denningite, guilleminite.

Distribution: From the Musonoi Co–Cu mine, near Kolwezi, Katanga Province, Congo (Shaba Province, Zaire).

Name: To honor Aimé Marthoz (1894–1962), former Director of the Union Minière de Haut-Katanga, Congo.

Type Material: University of Pierre and Marie Curie, Paris, 12.252; Natural History Museum, Paris; National School of Mines, Paris, France.

References: (1) Cesbron, F., R. Oosterbosch, and R. Pierrot (1969) Une nouvelle espèce minérale: la marthozite. Uranyl-sélénite de cuivre hydraté. Bull. Soc. fr. Minéral., 92, 278–283 (in French with English abs.). (2) (1970) Amer. Mineral., 55, 533 (abs. ref. 1). (3) Cooper, M.A. and F.C. Hawthorne (2001) Structure topology and hydrogen bonding in marthozite, $Cu^{2+}[(UO_2)_3(SeO_3)_2O_2](H_2O)_8$, a comparison with guilleminite, $Ba[(UO_2)_3(SeO_3)_2O_2](H_2O)_3$. Can. Mineral., 39, 797–807.