

**Marécottite****Mg<sub>3</sub>(UO<sub>2</sub>)<sub>4</sub>(SO<sub>4</sub>)<sub>2</sub>O<sub>3</sub>(OH)·28H<sub>2</sub>O**

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**Crystal Data:** Orthorhombic. *Point Group:* *mm*2. 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*.  $\alpha$  = n.d.  $\beta$  = 1.780–1.785  $\gamma$  = 1.795–1.800 *2V*(meas.) = 39° *2V*(calc.) = n.d.

**Cell Data:** *Space Group:* *P*2<sub>1</sub>*bn*. *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)

<b>Chemistry:</b>	(1)	(2)
UO <sub>3</sub>	60.5	65.82
SeO <sub>2</sub>	23.7	17.02
CuO	4.3	6.10
H <sub>2</sub> O	10.7	11.06
<u>Total</u>	<u>99.2</u>	<u>100.00</u>

(1) Musonoi Extension mine, Congo; H<sub>2</sub>O by the Penfield method., partially dehydrated material approaching a probable composition Cu(UO<sub>2</sub>)<sub>3</sub>O<sub>2</sub>(SeO<sub>3</sub>)<sub>2</sub>·6H<sub>2</sub>O. (2) Cu(UO<sub>2</sub>)<sub>3</sub>O<sub>2</sub>(SeO<sub>3</sub>)<sub>2</sub>·8H<sub>2</sub>O.

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

**Association:** Digenite, demesmaeckerite, 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<sup>2+</sup>[(UO<sub>2</sub>)<sub>3</sub>(SeO<sub>3</sub>)<sub>2</sub>O<sub>2</sub>](H<sub>2</sub>O)<sub>8</sub>, a comparison with guilleminite, Ba[(UO<sub>2</sub>)<sub>3</sub>(SeO<sub>3</sub>)<sub>2</sub>O<sub>2</sub>](H<sub>2</sub>O)<sub>3</sub>. *Can. Mineral.*, 39, 797–807.