Saléeite $Mg(UO_2)_2(PO_4)_2 \cdot 10H_2O$

Crystal Data: Monoclinic, pseudotetragonal. *Point Group:* $2/m$. Crystals are square plates, composite, flattened on {001}, with {001}, {100}, {120}, {012} (pseudotetragonal indices), to 2.5 cm; commonly in subparallel lamellar aggregates.

Physical Properties: *Cleavage:* On {001}, perfect; on {010}, {110}, indistinct (pseudotetragonal indices). Hardness = 2–3 D(meas.) = 3.27 D(calc.) = 3.21 Radioactive; fluoresces bright lemon-yellow under LW UV, pale yellow under SW UV.

Optical Properties: Transparent to opaque. *Color:* Lemon-yellow, straw-yellow, greenish yellow. *Luster:* Adamantine to waxy.
Optical Class: Biaxial (–), typically nearly uniaxial (–), sectored. *Pleochroism:* X = colorless; Z = pale greenish yellow. *Dispersion:* $r > v$, marked. α = 1.554–1.559 β = 1.570–1.582 γ = 1.571–1.585 2V(meas.) = 0°–61°

Cell Data: *Space Group:* $P2_1/c$. a = 6.951(3) b = 19.947(8) c = 9.896(4) β = 135.17(2)° Z = 2

X-ray Powder Pattern: Shinkolobwe, Congo.
9.97 (10), 3.48 (8), 4.94 (7), 4.45 (4), 2.20 (3), 1.739 (3), 6.54 (2)

Chemistry:

	(1)	(2)		(1)	(2)
UO_3	61.72	61.23	MgO	4.43	4.31
P_2O_5	14.87	15.19	H_2O	19.39	19.27
			Total	100.41	100.00

(1) Cunha Baixa mine, Portugal; corresponds to $Mg_{1.03}(UO_2)_{2.02}(PO_4)_{1.96} \cdot 10.05H_2O$.
(2) $Mg(UO_2)_2(PO_4)_2 \cdot 10H_2O$.

Mineral Group: Autunite group.

Occurrence: In the oxidized zone of uranium-bearing polymetallic hydrothermal and sedimentary mineral deposits.

Association: Torbernite, autunite, zeunerite, bassetite, dewindtite, sabugalite, phosphuranylite, dumontite.

Distribution: Many localities. A few for good examples or studied material include: from Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire). At Schneeberg, Saxony, Germany. In Spain, from the Caridid mine, Villavieja de Yeltes, Salamanca Province. From the Cunha Baixa and Quarta Feira mines, Sabugal, Portugal. From Arcu su Linnarbu, near Capoterra, Sardinia, Italy. In England, in Cornwall, from the South Terras mine, St. Stephen-in-Brannel; in Wheals Edward and Owles, St. Just; from Wheal Basset, Illogan; and at Roughton Great Consols, St. Clether. In the Plessis deposit, near Mortagne, Deux-Sèvres, France. In Australia, large crystals from the Ranger mine, Jabiru, and at Rum Jungle, Alligator River district, Northern Territory; in the Lake Boga granite quarry, near Swan Hill, and at Wycheproof, Victoria. From the Énio pegmatite mine, and at the Córrego do Urucum pegmatite, near Galiléia, Minas Gerais, Brazil. In the USA, from the Sue mine, Cherry Creek area, Gila Co., Arizona; on the High Park claims, Teller Co., Colorado.

Name: In honor of Achille Salée (1883–1932), Professor of Geology, Catholic University of Louvain, Louvain, Belgium.

Type Material: Catholic University of Louvain, Louvain, Belgium, K1812.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 988–989. (2) Frondel, C. (1958) Systematic mineralogy of uranium and thorium. U.S. Geol. Sur. Bull. 1064, 177–183. (3) Piret, P. and M. Deliens (1980) Nouvelles données sur la saléeite holotype de Shinkolobwe. Bull. Minéral., 103, 630–632 (in French with English abs.). (4) Vochten, R. and M. Van Doorselaer (1984) Secondary uranium minerals of the Cunha Baixa mine. Mineral. Record, 15, 293–297. (5) Miller, S.A. and J.C. Taylor (1986) The crystal structure of saleeite, $Mg[UO_2PO_4]_2 \cdot 10H_2O$. Zeits. Krist., 177, 247–253.