Iriginite $(UO_2)Mo_2^{6+}O_7 \cdot 3H_2O$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. In very fine-grained aggregates.

Physical Properties: *Fracture:* Conchoidal to uneven. Hardness = 4–5 D(meas.) = 3.84, low due to impurities. D(calc.) = 4.241 Radioactive.

Optical Properties: Semitransparent. *Color:* Canary-yellow. *Luster:* Vitreous to dull. *Optical Class:* Biaxial. *Orientation:* Parallel extinction. $\alpha = 1.730(3)$ $\beta = \sim 1.82$ $\gamma = \sim 1.93$ 2V(meas.) = Large.

Cell Data: *Space Group: Pbcm* (synthetic). $a = 6.705(1)$ $b = 12.731(2)$ $c = 11.524(2)$ Z = 4

X-ray Powder Pattern: Aleksandrovskii Golets deposit, Russia.
3.222 (10), 1.129 (8), 2.625 (6), 2.142 (6), 1.836 (6), 1.249 (6), 1.206 (6)

Chemistry:

	(1)	(2)	(3)
UO_3	41.91	46.45	45.55
UO_2	0.00		
MoO_3	38.62	42.80	45.84
CaO	0.46		
H_2O	9.70	10.75	8.61
insol.	9.04		
Total	99.73	[100.00]	100.00

(1) Aleksandrovskii Golets deposit, Russia; H_2O taken as loss on ignition. (2) Analysis (1) recalculated to 100% after deduction of CaO as unessential and insoluble; then corresponding to $(UO_2)Mo_{1.84}O_{6.52} \cdot 3.70H_2O$. (3) $(UO_2)Mo_2O_7 \cdot 3H_2O$.

Occurrence: In granulated albite, in part replacing brannerite (Aleksandrovskii Golets deposit, Russia); in a stream channel in sandstone (Hart Table, South Dakota, USA); may be of post-mining origin.

Association: Ferrimolybdite, ilsemannite, metauranocircite, uranyl sulfates, gypsum.

Distribution: Found in considerable abundance in some deposits. From the Aleksandrovskii Golets Mo–U deposit, upper Chetkanda River, Chara district, Udokan Range, northern Transbaikal, Russia. Found in the Shunak Mountains, 60 km west of the Mointy railroad station, and at the Kyzylsai Mo–U deposit, Chu-Ili Mountains, southwestern Balkhash region, Kazakhstan. In the Rabéjac uranium deposit, seven km south-southeast of Lodève, Hérault, France. In the USA, at Hart Table, southwest of Scenic, Pennington Co., South Dakota; east of Cameron, Coconino Co., Arizona; and at the Clyde Long property, Elk Park area, San Juan Co., Colorado. From Shinkolobwe, Katanga Province, Congo (Shaba Province, Zaire). In the Hervey's Range deposit, 55 km west of Townsville, Queensland, Australia.

Name: A euphonious construction, devoid of connotation.

Type Material: Mining Institute, St. Petersburg, Russia, 1257/2.

References: (1) Getseva, R.V. and K.T. Salev'eva (1956) Handbook for the determination of uranium minerals. Moscow, 197 (in Russian). (2) Soboleva, M.V. and I.A. Pudovkina (1957) Uranium minerals handbook. Moscow, 249–251 (in Russian). (3) (1958) Amer. Mineral., 43, 378 and 379 (abs. refs. 1 and 2). (4) Epshtein, G.Y. (1959) On the molybdates of uranium – moluranite and iriginite. Zap. Vses. Mineral. Obshch., 88, 564–570 (in Russian). (5) Stephenson, D.A. (1964) Iriginite from South Dakota. Amer. Mineral., 49, 408–414. (6) Krivovichev, S.Y. and P.C. Burns (2000) The crystal chemistry of uranyl molybdates. II. The crystal structure of iriginite. Can. Mineral., 38, 847–851.