Seelite $\mathbf{Mg(UO_2)_2(As^{3+}O_3)_{2-x}(As^{5+}O_4)_x \cdot 7H_2O}$ **(x**= 0.6)

Crystal Data: Monoclinic. *Point Group:* $2/m$. Crystals are tabular, flattened on {100} or {001}, or elongated [010], showing {100}, {001}, {010}, {011}, {$01\overline{1}$}, to 1 mm; typically in spherules, rosettes, and divergent needles.

Physical Properties: *Fracture:* Irregular. Hardness = ∼3 D(meas.) = 3.70 D(calc.) = 3.60–3.71 Radioactive.

Optical Properties: Semitransparent. *Color:* Canary-yellow, apple-green. *Streak:* White. *Luster:* Vitreous.
Optical Class: Biaxial (–). *Pleochroism:* Strong; $X = Y$ = yellow; Z = colorless. *Orientation:* $Z \wedge c = 5(1)°$. *Dispersion:* $r \gg v$, inclined. α = 1.602–1.610 β = 1.730–1.737 γ = 1.740–1.753 2V(meas.) = 30°–41° 2V(calc.) = 34°–37.5°

Cell Data: *Space Group:* $C2/m$. a = 18.194–18.207 b = 7.062–7.071 c = 6.661–6.670 β = 99.65°−99.70° Z = 2

X-ray Powder Pattern: Rabéjac deposit, France.
9.02 (100), 4.48 (80), 3.01 (60), 2.849 (60), 3.28 (50), 4.90 (40), 4.00 (40)

Chemistry:

	(1)	(2)
UO_3	62.43	62.75
As_2O_5	6.67	25.52
As_2O_3	13.41	
MgO	4.09	4.39
H_2O	13.40	[7.34]
Total	[100.00]	[100.00]

(1) Rabéjac deposit, France; by electron microprobe, original total 104.03%, As^{3+}:As^{5+} from crystal-structure analysis, H_2O by CHN analyzer; corresponds to $Mg_{0.97}(UO_2)_{2.08}(As^{3+}O_3)_{1.30}(As^{5+}O_4)_{0.56} \cdot 7.08H_2O$. (2) Talmessi mine, Iran; by electron microprobe, H_2O by difference, corresponds to $Mg_{1.00}(UO_2)_{2.01}(AsO_4)_{2.03} \cdot 4H_2O$.

Occurrence: A rare mineral in the oxidation zone of uranium-bearing hydrothermal deposits.

Association: Annabergite, talmessite, zaratite, uranospinite (Talmessi mine, Iran); zeunerite (Rabéjac deposit, France).

Distribution: In the Talmessi mine, 35 km west of Anarak, Iran. From the Rabéjac uranium deposit, seven km south-southeast of Lodève, Hérault, France.

Name: To honor Paul Seel (1904–1982) and Hilde Seel (1902–1987), American collectors of microscopic minerals, Philadelphia, Pennsylvania, USA.

Type Material: Royal Institute of Natural Sciences, Brussels, Belgium, RC4191; University of Pierre and Marie Curie, Paris, France.

References: (1) Bariand, P., B. Bachet, C. Brassy, O. Medenbach, M. Deliens, and P. Piret (1993) Seelite, a new uranium mineral from the Talmessi mine, Iran, and Rabejac, France. Mineral. Record, 24, 463–467. (2) (1994) Amer. Mineral., 79, 1012 (abs. ref. 1). (3) Piret, P. and J. Piret-Meunier (1994) Structure de la seelite de Rabejac (France). Eur. J. Mineral., 6, 673–677 (in French with English abs.).