## Šreinite $Pb(UO_2)_4(BiO)_3(PO_4)_2(OH)_7 \cdot 4H_2O$

**Crystal Data**: Cubic. *Point Group*: 4/*m* $\bar{3}$ 2/*m*, 432, 2/*m* $\bar{3}$ , or 23. As irregular coatings to 0.2 mm thick with a rugged glossy surface (area to 2 × 3 mm), no crystals were observed.

**Physical Properties**: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = 2-4 D(meas.) = n.d. D(calc.) = 5.20

**Optical Properties**: Opaque, translucent in thin fragments. *Color*: Yellow with an orange tint. *Streak*: Pale yellow. *Luster*: Vitreous to sub-adamantine.
*Optical Class*: Isotropic. $n$ = >1.74

**Cell Data**: *Space Group*: *Im*3*m*, *I*432, *Im*3, or *I*23. $a$ = 15.5728(7) Z = 5

**X-Ray Diffraction Pattern**: Near Horní Halže, Krušné hory Mountains, Czech Republic.
4.163 (100), 3.179 (99), 3.671 (77), 2.596 (54), 5.513 (53), 4.499 (48), 3.484 (31)

**Chemistry**:

| | (1) | (2) |
|---|---|---|
| BaO | 0.08 | |
| CaO | 0.18 | |
| MgO | 0.01 | |
| PbO | 7.78 | 9.52 |
| $Bi_2O_3$ | 29.73 | 29.83 |
| $SiO_2$ | 0.18 | |
| $P_2O_5$ | 3.41 | 6.06 |
| $As_2O_5$ | 3.79 | |
| $UO_3$ | 49.23 | 48.82 |
| $H_2O$ | [5.68] | 5.77 |
| Total | 100.07 | 100.00 |

(1) Near Horní Halže, Krušné hory Mountains, Czech Republic; average electron microprobe analysis supplemented by IR and Raman spectroscopy, $H_2O$ calculated; corresponds to $(Pb_{0.83}Ca_{0.08}Ba_{0.01}Mg_{0.01})_{\Sigma=0.93}(UO_2)_{4.10}(BiO)_{3.04}[(PO_4)_{1.15}(AsO_4)_{0.78}(SiO_4)_{0.07}]_{\Sigma=2.00}(OH)_{7.02} \cdot 4H_2O$.
(2) $Pb(UO_2)_4(BiO)_3(PO_4)_2(OH)_7 \cdot 4H_2O$.

**Occurrence**: A secondary mineral.

**Association**: Uranosphaerite, goethite, Pb-bearing phosphuranylite, metatorbernite, bismutoferrite, kasolite, uranophane.

**Distribution**: From mine dumps near Horní Halže, 2 km west southwest of Měděnec, Krušné hory Mountains, Czech Republic.

**Name**: Honors Dr. Vladimír *Šrein* (b. 1953), a Czech mineralogist of the Institute of Rock Structures and Mechanics, Academy of Sciences of the Czech Republic, who found the first specimens of this mineral and has published extensively on the Měděnec-Halže region, Krušné hory Mountains, Czech Republic.

**References**: (1) Sejkora, J. and J. Čejka (2007) Šreinite from Horní Halže, the Krušné hory Mountains, Czech Republic, a new mineral species, its comparison with asselbornite from Schneeberg, and new data for asselbornite. Neues Jahrb. Mineral., Abh., 184(2), 197-206.