Spriggite $Pb_3(UO_2)_6O_8(OH)_2 \cdot 3H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Prismatic crystals to 150 μm form randomly oriented aggregates to >1 cm. *Twinning*: By penetration of three individuals separated by ~60° rotation around [100] to form six-legged stars.

Physical Properties: *Cleavage*: Good on {100}. Tenacity: Brittle. *Fracture*: Uneven. Hardness = ~4 D(meas.) = n.d. D(calc.) = 7.64(6)

Optical Properties: Transparent. *Color*: Bright orange. Streak: Pale orange. *Luster*: Vitreous. *Optical Class*: Biaxial. *n*(min) = 1.807 *n*(max) = 1.891
Pleochroism: Strong, pale yellow to dark orange.

Cell Data: *Space Group*: *C*2/*c*. *a* = 28.355(9) *b* = 11.990(4) *c* = 13.998(4) β = 104.248(5) Z = 8

X-ray Powder Pattern: Radium Ridge, near Arkaroola, Northern Flinders Ranges, South Australia. 3.10 (100), 3.46 (80), 6.92 (60), 1.918 (60), 6.02 (30), 2.74 (30), 2.01 (30)

Chemistry:

	(1)
UO_3	70.90
PbO	25.51
CaO	0.14
BaO	0.25
H_2O	[2.98]
Total	99.78

(1) Radium Ridge, near Arkaroola, Northern Flinders Ranges, South Australia.; average electron microprobe analysis supplemented by FTIR spectroscopy, H_2O calculated from stoichiometry; corresponds to $(Pb_{2.77}Ca_{0.06}Ba_{0.04})_{\Sigma=2.87}U_6O_{19.9}(OH)_2 \cdot 3H_2O$.

Occurrence: Secondary mineral from the supergene alteration of U-Nb-REE-bearing hydrothermal hematite breccia.

Association: Beta-uranophane, soddyite, kasolite, Ce-rich francoisite-(Nd), metatorbernite, billietite, Ba-bearing boltwoodite, schoepite, metaschoepite, weeksite,

Distribution: At the Number 2 workings on Radium Ridge, near Mt. Painter, near Arkaroola, Northern Flinders Ranges, South Australia.

Name: Honors geologist and conservationist Reginald Claude *Sprigg* (1919-1994), founder of the Arkaroola Tourist Station.

Type Material: Musée géologique cantonal, Lausanne, Switzerland (MGL68937) and South Australian Museum, Adelaide, South Australia (G27305).

References: (1) Brugger, J., S.V. Krivovichev, P. Berlepsch, N. Meisser, S. Ansermet, and T. Armbruster (2004) Spriggite, $Pb_3[(UO_2)_6O_8(OH)_2](H_2O)_3$, a new mineral with β-U_3O_8-type sheets: Description and crystal structure. Amer. Mineral., 89, 339-347.