

Crystal Data: Orthorhombic. *Point Group:* 2/m 2/m 2/m. As blades and tablets, to ~1 mm, flattened on {001} and elongated along [010] that display {100}, {010}, {001}, {110}, {101}, {011} and {111}.

Physical Properties: *Cleavage:* Perfect on {001}, good on {100} and {010}. *Fracture:* Irregular. *Tenacity:* Brittle. Hardness = 1.5-2 D(meas.) = 2.68 D(calc.) = 2.699 Fluoresces bright bluish white under a 405 nm laser. Dissolves very slowly in H₂O (minutes) and dissolves immediately with effervescence in dilute HCl.

Optical Properties: Transparent. *Color:* Pale yellowish green. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (-). $\alpha = 1.538(1)$ $\beta = 1.542(1)$ $\gamma = 1.545(1)$ $2V(\text{meas.}) = 81(2)^\circ$ $2V(\text{calc.}) = 81.6^\circ$ *Dispersion:* $r < v$, weak. *Pleochroism:* $X = \text{light greenish yellow}$, $Y \approx Z = \text{light yellow}$. *Absorption:* $X > Y \approx Z$. *Orientation:* $X = c$, $Y = b$, $Z = a$.

Cell Data: Space Group: *Pmmn*. $a = 17.9688(13)$ $b = 18.4705(6)$ $c = 10.1136(4)$ $Z = 2$

X-ray Powder Pattern: Markey mine, Red Canyon, San Juan County, Utah, USA. 5.43 (100), 6.41 (91), 10.12 (69), 4.104 (37), 3.984 (34), 5.07 (33), 4.618 (25)

Chemistry:	(1)	(2)
CaO	18.60	18.52
UO ₃	42.90	41.98
CO ₂	[21.30]	20.99
H ₂ O	[18.78]	18.51
Total	101.58	100.00

(1) Markey mine, Red Canyon, San Juan County, Utah, USA; average of 9 EDS analyses supplemented with Raman spectroscopy, H₂O and CO₂ calculated from stoichiometry; corresponds to Ca_{8.91}(U_{1.01}O₂)₄(CO₃)₁₃·28H₂O. (2) Ca₉(UO₂)₄(CO₃)₁₃·28H₂O.

Occurrence: As efflorescent crusts on the surfaces of mine walls in a Colorado Plateau-type, roll front uranium deposit.

Association: Asphaltum, calcite, gypsum, natrozippeite.

Distribution: In the Markey mine, Red Canyon, White Canyon District, San Juan County, Utah, USA.

Name: For the locality, the *Markey* mine.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (67091, 67092, 67093, 67094 and 69095) and the A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4932/1).

References: (1) Kampf, A.R., J. Plášil, A.V. Kasatkin, J. Marty, and J. Čejka (2018) Markeyite, a new calcium uranyl carbonate mineral from the Markey mine, San Juan County, Utah, USA. *Mineral. Mag.*, 82(5), 1089-1100. (2) (2019) *Amer. Mineral.*, 104(5), 781-782 (abs. ref 1).