Klaprothite $Na_6(UO_2)(SO_4)_4(H_2O)_4$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As equant to blocky prismatic crystals, to ~ 1 mm, with skeletal or rounded edges and in parallel intergrowths. Crystals are elongated along [010] and display {100}, {001}, {110}, {011}, and {012}.

Physical Properties: *Cleavage*: Perfect on {100} and {001}. *Tenacity*: Brittle, slightly sectile. *Fracture*: Irregular. Hardness = ~ 2.5 D(meas.) = 2.90(2) D(calc.) = 2.923 Bright bluish green fluorescence under SW & LW UV. Easily soluble in water; slightly deliquescent.

Optical Properties: Transparent. *Color*: Yellowish green to greenish yellow.
Streak: Pale yellow-green. *Luster*: Vitreous.
Optical Class: Biaxial (–). $\alpha = 1.497$ $\beta = 1.517$ $\gamma = 1.519$ 2V(meas.) = 34(1)°
2V(calc.) = 34.7° *Pleochroism*: *X* = colorless, *Y* = light yellowish green, *Z* = light yellowish green.
Absorption: $X < Y \approx Z$. *Orientation*: $Y = b$, $X \wedge c = 10°$ in obtuse β. *Dispersion*: $r > v$, distinct.

Cell Data: *Space Group*: $P2_1/c$. $a = 9.8271(4)$ $b = 9.7452(3)$ $c = 20.8725(15)$ $\beta = 98.743(7)°$
Z = 4

X-ray Powder Pattern: Blue Lizard mine, Red Canyon, San Juan County, Utah, USA.
3.434 (100), 7.09 (97), 5.158 (77), 9.72 (68), 3.082 (65), 3.012 (61), 4.330 (58)

Chemistry:	(1)	(2)
Na_2O	21.06	21.51
UO_3	33.14	33.10
SO_3	35.93	37.05
H_2O	[8.15]	8.34
Total	98.28	100.00

(1) Blue Lizard mine, Red Canyon, San Juan County, Utah, USA; average of 11 electron microprobe analyses supplemented by Raman spectroscopy, H_2O calculated from stoichiometry; corresponds to $Na_{6.01}(U_{1.03}O_2)(S_{0.99}O_4)_4(H_2O)_4$. (2) $Na_6(UO_2)(SO_4)_4(H_2O)$.

Occurrence: As efflorescent crusts on mine walls, formed by hydration-oxidation weathering of primary uranium minerals (mainly uraninite) by acidic solutions from the decomposition of sulfides.

Association: Blödite, bluelizardite, bobcookite, epsomite, gypsum, hexahydrite, konyaite, plášilite, tamarugite.

Distribution: From the Blue Lizard mine, Red Canyon, White Canyon district, San Juan County, Utah, USA.

Name: Honors German chemist Martin Heinrich Klaproth (1743-1817), the discoverer of uranium (1789), zirconium (1789) and cerium (1803).

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (65610- 65613); A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4778/1).

References: (1) Kampf, A.R., J. Plášil, A.V. Kasatkin, J. Marty, and J. Čejka (2017) Klaprothite, péligotite and ottohahnite, three new minerals with bidentate UO_7-SO_4 linkages from the Blue Lizard mine, San Juan County, Utah, USA. Mineral. Mag., 81(4), 753-779. (2) (2017) Amer. Mineral., 102, 2343-2344 (abs. ref. 1).