Hydropascoite $Ca_3(V_{10}O_{28})\cdot 24H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. Crystals display {001}, {010}, {011}, {10$\bar{1}$}, {1$\bar{1}$0} and {101}. Typically, as blades, flattened on {001} and elongated along [100], to 2 mm.

Physical Properties: *Cleavage*: Perfect on {001}. *Tenacity*: Brittle. *Fracture*: Irregular. Hardness = 1.5 D(meas.) = 2.38(2) D(calc.) = 2.324 Slowly soluble in water.

Optical Properties: Transparent. *Color*: Dark yellow-green. *Streak*: Pistachio-green. *Luster*: Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.730(5)$ $\beta = 1.780(5)$ $\gamma = 1.790(5)$ 2V(meas.) = 54.1(6)° 2V(calc.) = 47.1° *Pleochroism*: *X* = bluish green, *Y* = orange, *Z* = yellowish green.
Absorption: *X* > *Z* > *Y*. *Orientation*: *X* ^ *a* ≈ 10°, *Z* ^ *c** ≈ 20°. Anomalous extinction colors.
Dispersion: Extreme.

Cell Data: *Space Group*: $P\bar{1}$. $a = 10.0870(19)$ $b = 11.0708(2)$ $c = 21.8112(15)$ $\alpha = 94.112(7)°$ $\beta = 96.053(7)°$ $\gamma = 116.398(8)°$ Z = 2

X-ray Powder Pattern: Packrat mine, near Gateway, Mesa County, Colorado, USA.
8.92 (100), 10.70 (31), 9.77 (28), 7.41 (22), 7.75 (20), 6.91 (20), 2.988 (14)

Chemistry:	(1)	(2)
Na_2O	0.62	
CaO	10.02	11.14
V_2O_5	60.44	60.23
H_2O	[28.92]	28.63
Total	100.00	100.00

(1) Packrat mine, near Gateway, Mesa County, Colorado, USA; normalized average of 26 electron microprobe analyses, H_2O calculated from structure analysis; corresponds to $(Ca_{2.69}Na_{0.30})_{\Sigma=2.99}(H_{0.31}V^{5+}{}_{10}O_{28})\cdot 24H_2O$. (2) $Ca_3(V_{10}O_{28})\cdot 24H_2O$.

Occurrence: A secondary mineral in an oxidized roll-front uranium and vanadium deposit in sandstone.

Association: Asphaltum, montroseite, corvusite, pascoite, rossite/metarossite, sherwoodite.

Distribution: Found at the Packrat mine, near Gateway, Mesa County, Colorado, USA.

Name: Alludes to the compositional and structural similarity of the mineral to *pascoite*, $Ca_3(V_{10}O_{28})\cdot 17H_2O$, and with a prefix for the fact that it has 41% more H_2O groups.

Type Material: Natural History Museum of Los Angeles County, Los Angeles, California, USA (66267).

References: (1) Kampf, A.R., B.P. Nash, J. Marty, J.M. Hughes, and T.P. Rose (2017) Hydropascoite, $Ca_3(V_{10}O_{28})\cdot 24H_2O$, a new decavanadate mineral from the Packrat mine, Mesa County, Colorado. Can. Mineral., 55(2), 207-217. (2) (2018) Amer. Mineral., 103, 2528 (abs. ref. 1).