Pascoite $Ca_3V^{5+}_{10}O_{28}\cdot 17H_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. Crystals minute, lathlike with oblique terminations, in granular crusts.

Physical Properties: *Cleavage*: {010}, distinct. *Fracture*: Conchoidal. Hardness = ~2.5
D(meas.) = 2.455 D(calc.) = 2.47 Soluble in H_2O.

Optical Properties: Translucent. *Color*: Dark red-orange to yellow-orange, dirty yellow on partial dehydration. *Streak*: Cadmium-yellow. *Luster*: Vitreous to subadamantine.
Optical Class: Biaxial (–). α = 1.775(5) β = 1.815(5) γ = 1.825(5) 2V(meas.) = 50°-56°
Pleochroism: *X* = light cadmium yellow; *Y* = cadmium yellow; *Z* = orange.
Orientation: OAP ⊥ {010}. *Dispersion*: Crossed, strong. *Absorption*: *Z* > *Y* > *X*.

Cell Data: *Space Group*: *C*2/*m*. *a* = 19.5859(6) *b* = 10.1405(3) *c* = 10.9110(3) β = 120.815(1)° Z=2

X-ray Powder Pattern: Minasragra, Peru.
5.5 (10), 4.67 (10), 5.1 (8), 7.3 (7), 3.01 (7), 8.8 (6), 4.45 (6)

Chemistry:

	(1)	(2)
V_2O_5	64.6	65.71
MoO_3	0.3	
CaO	12.6	12.16
H_2O^+	7.8	
H_2O^-	13.8	
H_2O		22.13
Total	100.0	100.00

(1) Minasragra, Peru; total includes 0.9 undetermined. (2) $Ca_3V_{10}O_{28}\cdot 17H_2O$.

Occurrence: Leached from near-surface V-oxides by ground water; as efflorescences in mines.

Association: Carnotite.

Distribution: At Minasragra, 46 km from Cerro de Pasco, Peru. From the Urcal deposit, La Rioja Province, Argentina. In the USA, in Colorado, from the Hawkeye, Burro, and Deremo-Snyder mines, near Slick Rock, San Miguel Co.; in the Bitter Creek, Mill No. 1, and Peanut mines, Uravan district, Montrose Co.; at the Corvusite and La Sal No. 2 mines, Gateway district, Mesa Co.; and from the Rifle mine, Garfield Co. At the Black Ape mine, Thompsons district, Grand Co., the Crescent No. 3 claim, Crescent Creek, Garfield Co., and the Mi Vida mine, Big Indian district, San Juan Co., Utah. In Arizona, at the Monument No. 2 mine, Monument Valley; in the Mesa No. 1, No. 5, and No. 6 mines, Lukachukai Mountains, and the Zona No. 1 claim, Carrizo Mountains, Apache Co. From the Ambrosia Lakes district, McKinley Co., New Mexico.

Name: For the original locality, near Cerro de *Pasco*, Peru.

Type Material: Harvard University, Cambridge, Massachusetts, 101701, 91449; National Museum of Natural History, Washington, D.C., USA, 87662, 93297.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 1055-1056. (2) Weeks, A.D. and M.E. Thompson (1954) Identification and occurrence of uranium and vanadium minerals from the Colorado Plateaus. U.S. Geol. Sur. Bull. 1009-B, 54-55. (3) Hughes, J.M., M. Schindler, and C. Francis (2005) The *C*2/*m* disordered structure of pascoite, $Ca_3[V_{10}O_{28}]\cdot 17H_2O$: bonding between structural units and interstitial complexes in compounds containing the $[V_{10}O_{28}]^{6-}$ decavanadate polyanion. Can. Mineral., 43, 1379-1386. (4) (2006) Amer. Mineral., 91(4),715 (abs. ref. 3). (5) Swallow, A.G., F.R. Ahmed, and W.H. Barnes (1966) The crystal structure of pascoite, $Ca_3V_{10}O_{28}\cdot 17H_2O$. Acta Cryst., 21, 397-405. (6) Traill, R.J. and A.P. Sabina (1960) Catalogue of X-ray diffraction patterns and specimen mounts on file at the Geological Survey of Canada. Geol. Sur. of Canada, Paper 60-4, 76-77.