Metamunirite β–$NaV^{5+}O_3$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals are fibrous, needlelike, or flattened laths, with dominant {101}, unterminated, to 1 mm; in clusters of radiating needles.

Physical Properties: *Cleavage:* The fibrous character is probably due to one or more perfect cleavages. *Tenacity:* Friable. Hardness = Very soft. D(meas.) = 2.877 (synthetic). D(calc.) = 2.926 Readily soluble in H_2O.

Optical Properties: Semitransparent. *Color:* Colorless.
Optical Class: Biaxial (+). *Orientation:* $X = a$; $Y = c$; $Z = b$. $\alpha = 1.780(2)$ (synthetic). $\beta = 1.800(2)$ $\gamma =$ n.d. 2V(meas.) = 30°–40°

Cell Data: *Space Group: Pnma.* $a = 14.134(7)$ $b = 3.648(2)$ $c = 5.357(2)$ Z = 4

X-ray Powder Pattern: San Miguel Co., Colorado, USA; intensities from synthetic material. 5.05 (100), 2.957 (35), 3.530 (25), 3.241 (18), 3.016 (13), 2.685 (12), 7.07 (11)

Chemistry:

	(1)	(2)
V_2O_5	75.2	74.58
Na_2O	24.8	25.42
Total	[100.0]	100.00

(1) Deremo-Snyder mine, Colorado, USA; by electron microprobe, average of 31 determinations, recalculated to 100% to account for 8–10 wt% deficiency due to epoxy mounting medium between fibers. (2) $NaVO_3$.

Occurrence: Extremely rare, in cavities in vanadium-bearing sandstone.

Association: Rossite, metarossite, pascoite, clay minerals.

Distribution: From the Burro and Deremo-Snyder mines, near Slick Rock, San Miguel Co., Colorado, USA.

Name: For its relation to *munirite*, from which it may form by dehydration.

Type Material: National Museum of Natural History, Washington, D.C., USA, 168386.

References: (1) Evans, H.T., Jr. (1991) Metamunirite, a new anhydrous sodium metavanadate from San Miguel County, Colorado. Mineral. Mag., 55, 509–513. (2) (1992) Amer. Mineral., 77, 1116–1117 (abs. ref. 1). (3) Kato, K. and E. Takayama (1984) Das Entwässerungsverhalten des Natriummetavanadatdihydrats und die Kristallstruktur des β-Natriummetavanadats. Acta Cryst., 40, 102–105 (in German with English abs.). (4) Haynes, P.E. (1992) Metamunirite, haynesite, and other microminerals from the four-corners states. Thirteeenth annual New Mexico mineral symposium, Socorro, New Mexico, 9 (abs.).