Anorthominasragrite $V^{4+}O(SO_4)\cdot 5H_2O$

Crystal Data: Triclinic. *Point Group*: $\bar{1}$. As crusts and spherical granular aggregates to ~1 mm.

Physical Properties: *Cleavage*: None. *Fracture*: n.d. *Tenacity*: n.d. Hardness = ~1
D(meas.) = n.d. D(calc.) = 2.12

Optical Properties: [Translucent.] *Color*: Blue-green. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (+). α = 1.548(2) β = 1.555(2) γ = 1.574(2) 2V(meas.) = 86(1)°
Orientation: $X \wedge c \approx 18°$ (in β obtuse), $Y \approx a$, $Z \wedge b \approx 19°$ (in γ obtuse).

Cell Data: *Space Group*: $P\bar{1}$. a = 7.548(3) b = 7.805(2) c = 7.821(3) α = 79.03(4)°
β = 71.94(3)° γ = 65.31(3)° Z = 2

X-ray Powder Pattern: North Mesa mines, Temple Mountain district, Emery County, Utah, USA.
6.617 (100), 7.053 (80), 4.116 (80), 3.712 (80), 3.206 (70), 2.934 (50), 5.314 (30)

Chemistry:

	(1)
VO_2	33.93
SO_3	30.78
H_2O	[35.52]
Total	100.23

(1) North Mesa mines, Temple Mountain district, Emery County, Utah, USA; average electron microprobe analysis, H_2O calculated from structure; corresponds to $V_{1.04}S_{0.98}O_5(H_2O)_5$.

Polymorphism & Series: Polymorphous with orthominasragrite and minasragrite.

Occurrence: In sandstone in a silicified fossil tree with a rim of coal around the tree.

Association: Orthominasragrite, bobjonesite.

Distribution: From the North Mesa mine group, Temple Mountain mining district, Emery County, Utah, USA.

Name: Prefix, *anortho*, denotes its relation to *minasragrite*, as a triclinic polymorph.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 83924).

References: (1) Cooper, M.A., F.C. Hawthorne, J.D. Grice, and P. Haynes (2003) Anorthominasragrite, $V^{4+}O(SO_4)(H_2O)_5$, a new mineral species from Temple Mountain, Emery County, Utah, U.S.A.: description, crystal structure and hydrogen bonding. Can. Mineral., 41, 959-979. (2) (2004) Amer. Mineral., 89(2), 467 (abs. ref. 1).