Vistepite $Mn_5^{2+}SnB_2Si_5O_{20}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As thin platelets, to 0.02 mm, intergrown with an unknown manganese silicate, in radial aggregates, up to 1.5 cm. *Twinning:* Polysynthetic.

Physical Properties: *Cleavage:* Perfect in three directions. *Tenacity:* Brittle. Hardness = 4.5 D(meas.) = 3.67(5) D(calc.) = 3.70

Optical Properties: Transparent. *Color:* Yellow-orange. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Dispersion:* $r > v$, strong. $\alpha = 1.696(3)$ $\beta = 1.711(5)$ $\gamma = 1.715(5)$ 2V(meas.) = 57(3)° 2V(calc.) = 54.3°

Cell Data: *Space Group:* $P2/m$. $a = 28.77(1)$ $b = 7.01(2)$ $c = 13.72(2)$ $\beta = 96.6(2)°$ Z = 7

X-ray Powder Pattern: Inyl'chek Mountains, Kyrgyzstan.
2.83 (10), 2.81 (10), 3.41 (8), 3.22 (8), 2.24 (7), 1.750 (6), 1.703 (5)

Chemistry:

	(1)
SiO_2	33.78
SnO_2	17.60
B_2O_3	7.98
Al_2O_3	0.66
FeO	0.44
MnO	39.40
CaO	0.66
Total	100.52

(1) Inyl'chek Mountains, Kyrgyzstan; by electron microprobe, B confirmed by a colorimetric method; corresponding to $(Mn_{4.84}Ca_{0.10}Fe_{0.05})_{\Sigma=4.99}Sn_{1.02}B_{2.00}(Si_{4.90}Al_{0.11})_{\Sigma=5.01}O_{20}$.

Occurrence: In a rhodonite vein in biotite-quartz hornfels at the margin of a tin-bearing granite massif.

Association: Rhodonite, quartz, tephroite, spessartine, galena, hübnerite, chalcopyrite, sphalerite, stannite, rhodochrosite, cassiterite, celsian, fluorite, helvite, neotocite, schorl, pyrite, pyrophanite.

Distribution: From Muzeinyi Sai [Museum Valley], near the Trudovye tin deposit, Inyl'chek Mountains, eastern Kyrgyzstan.

Name: For the mineralogist and systematic mineral collector Victor Ivanovich Stepanov (1924–1988), A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia.

Type Material: Il'menskii Preserve Museum, Miass; Vernadsky Geological Museum, Moscow, 57721; A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 88595.

References: (1) Pautov, L.A., D.I. Belakovskii, R. Scala, E.V. Sokolova, K.I. Ignatenko, and A.V. Mokhov (1992) Vistepite $Mn_5SnB_2Si_5O_{20}$ – a new borosilicate of manganese and tin. Zap. Vses. Mineral. Obshch., 121(4), 107–112 (in Russian). (2) (1994) Amer. Mineral., 79, 1013 (abs. ref. 1). (3) (1994) Mineral. Abs., 45, 241 (abs. ref. 1).