Borodaevite $Ag_5(Pb,Fe)Bi_7(Sb,Bi)_2S_{17}$

Crystal Data: Monoclinic. *Point Group:* $2/m$ or m. Crystals are elongated, platy; as irregular grains, to 1.2 mm.

Physical Properties: Hardness = n.d. VHN = 165 (20 g load). D(meas.) = n.d. D(calc.) = 7.90

Optical Properties: Opaque. *Color:* Black; white in reflected light. *Streak:* Black. *Luster:* Metallic.
Optical Class: Biaxial. *Anisotropism:* Distinct, brown. *Bireflectance:* Very weak.
R_1–R_2: (400) —, (420) 39.9–41.4, (440) 40.4–42.4, (460) 39.8–42.1, (480) 39.7–42.3, (500) 39.5–42.2, (520) 39.1–41.8, (540) 39.0–41.5, (560) 38.4–41.2, (580) 38.2–41.0, (600) 37.6–40.6, (620) 37.3–40.3, (640) 37.2–40.0, (660) 36.5–39.6, (680) 36.6–39.3, (700) 36.1–39.3

Cell Data: *Space Group:* $C2/m$ or Cm. $a = 13.515(7)$ $b = 4.098(3)$ $c = 26.000(8)$ $\beta = 93.00(4)^\circ$ $Z = 2$

X-ray Powder Pattern: Alaskitovoye deposit, Russia.
2.82 (10), 3.37 (9b), 3.24 (9), 3.49 (8b), 1.992 (8), 2.01 (7), 1.967 (6)

Chemistry:

	(1)
Ag	18.23
Pb	3.22
Fe	0.43
Sb	6.42
Bi	53.47
S	17.92
Total	99.69

(1) Alaskitovoye deposit, Russia; by electron microprobe, average of three analyses; corresponds to $Ag_{5.10}Pb_{0.47}Fe_{0.23}Bi_{7.73}Sb_{1.59}S_{16.88}$.

Occurrence: In a hydrothermal Sn–W deposit.

Association: Matildite, gustavite–andorite, aramayoite, galena, pavonite, ramdohrite, owyheeite, benjaminite, molybdenite, hübnerite, triplite, quartz.

Distribution: From the Alaskitovoye Sn–W deposit, near Ust-Nera, Sakha, Russia [TL].

Name: To honor Yuri Sergeevich Borodaev (1923–), Russian mineralogist, Moscow State University, Moscow, Russia.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 87992.

References: (1) Nenasheva, S.N, A.V. Efimov, A.V. Sivtzov, and N.N. Mozgova (1992) Borodaevite $[Ag_5(Fe,Pb)_1Bi_7]_{13}(Sb,Bi)_2S_{17}$ – a new mineral. Zap. Vses. Mineral. Obshch., 121(4), 113–120 (in Russian). (2) (1994) Amer. Mineral., 79, 763 (abs. ref. 1). (3) Ilinca, G. and E. Makovicky (1997) Note on the definition of borodayevite [*sic*] $[Ag_5(Fe,Pb)Bi_7]_{13}(Sb,Bi)_2S_{17}$. Neues Jahrb. Mineral., Monatsh., 337–353.