Shibkovite $K_2Ca_2(Zn_3Si_{12})O_{30}$

Crystal Data: Hexagonal. *Point Group*: 6/*m* 2/*m* 2/*m*. As equant grains, to 0.5 mm; resembles quartz.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: n.d. Hardness = 5.5-6 VHN = 609 (50 g load). D(meas.) = 2.89(2) D(calc.) = 2.90(5) Fluoresces bright red in SW UV.

Optical Properties: Transparent. *Color*: White to colorless; colorless in transmitted light. *Streak*: White. *Luster*: Vitreous.
Optical Class: Uniaxial or weakly biaxial (+). $\omega = 1.561(2)$ $\varepsilon = 1.563(2)$

Cell Data: *Space Group*: *P*6/*mcc*. $a = 10.505(1)$ $c = 14.185(3)$ Z = 2

X-ray Powder Pattern: Dara-i-Pioz glacier, northern Tadjikistan.
3.830 (100), 2.795 (85), 3.345 (60), 2.940 (50), 3.304 (40), 7.11 (35), 2.627 (35)

Chemistry:

	(1)
SiO_2	61.33
Al_2O_3	0.04
FeO	0.04
MnO	2.43
ZnO	20.80
CaO	6.00
K_2O	8.83
Na_2O	1.03
Total	100.50

(1) Dara-i-Pioz glacier, northern Tadjikistan; electron microprobe analysis supplemented by IR spectroscopy; corresponds to $K_{1.00}(Ca_{1.26}Mn_{0.40}Na_{0.39}Fe_{0.01})_{\Sigma=2.06}(K_{1.20}\square_{0.80})_{\Sigma=2.00}Zn_{3.01}(Si_{12.01}Al_{0.01})_{\Sigma=12.02}O_{30}$.

Mineral Group: Milarite group.

Occurrence: In coarse-grained microcline-quartz rocks in glacial moraine.

Association: Reedmergnerite, aegirine, polylithionite, sogdianite, albite, pyrochlore, pectolite, eudialyte-group minerals, turkestanite.

Distribution: In moraine of the Dara-i-Pioz glacier, northern Tadjikistan.

Name: Honors Russian geologists V.S. *Shibkov* (1926-1992) and N.V. *Shibkov* (1951-1991).

Type Material: Museum of the Ilmensky National Park, Miass, and in the A.E. Fersman Mineralogical Museum, Moscow, Russia.

References: (1) Pautov, L.A., A.A. Agakhonov, and E.V. Sokolova (1998) Shibkovite $K(Ca,Mn,Na)_2(K_{2-x}\square_x)Zn_3Si_{12}O_{30}$ - a new mineral of the milarite group. Zapiski Vseross. Mineral. Obshch., 127(4), 89- 94 (in Russian, English abs.). (2) (2000) Amer. Mineral., 85, 628 (abs. ref. 1). (3) Sokolova, E.V., V.B. Rybakov, and L.A. Pautov (1999) Crystal structure of shibkovite, Doklady Earth Sciences, 369A, 1288-1290.