Orlovite $KLi_2TiSi_4O_{10}(OF)$

Crystal Data: Monoclinic. *Point Group*: 2. As lamellar crystals to 2 mm or aggregates to 2 cm.

Physical Properties: *Cleavage*: Perfect on {001}. *Fracture:* n.d. *Tenacity*: Flexible. Hardness = 2-3 VHN= 94 (87-106) (10 g load). D(meas.) = 2.91(2) D(calc.) = 2.914 Resembles polylithionite. Fluoresces yellow under SW UV.

Optical Properties: Transparent to translucent [by analogy to mica group]. *Color*: Colorless; white in aggregates. *Streak*: White. *Luster*: Vitreous to pearly.
Optical Class: Biaxial (-). α = 1.600(2) β = 1.620(2) γ = 1.625(2) 2V(meas.) = 52(2)° 2V(calc.) = 52.6° *Dispersion*: $r < v$, weak.

Cell Data: *Space Group: C*2. a = 5.199(3) b = 9.068(7) c = 10.070(4) β = 99.35(2)° Z = 2

X-ray Powder Pattern: Darai-Pioz massif, Tajikistan.
3.33 (100), 4.48 (67), 9.96 (40), 3.87 (40), 2.860 (35), 2.400 (31), 2.570 (30)

Chemistry:	(1)
SiO_2	58.31
TiO_2	18.05
Nb_2O_5	0.50
Al_2O_3	0.22
FeO	0.40
MnO	0.03
K_2O	11.13
Cs_2O	0.24
Li_2O	7.25
Rb_2O	0.69
H_2O	0.21
F	4.35
$– O = F_2$	1.83
Total	99.55

(1) Darai-Pioz massif, Tajikistan; average of 10 electron microprobe analyses, supplemented by FTIR spectroscopy, Li and Rb by ICP OES, H_2O by SIMS; corresponds to $(K_{0.97}Rb_{0.03}Cs_{0.01})_{\Sigma=1.01}Li_{2.00}(Ti_{0.93}Nb_{0.02}Fe_{0.02}Al_{0.02})_{\Sigma=0.99}Si_4O_{11.04}[F_{0.94}(OH)_{0.10}]_{\Sigma=1.04}$.

Mineral Group: Mica group.

Occurrence: In a glacial moraine boulder of 80% coarse-grained quartz.

Association: Pectolite, quartz, baratovite, faizievite, zeravshanite, pyrochlore, fluorite, polylithionite, aegirine, leucosphenite.

Distribution: From the Darai-Pioz alkaline massif, at the junction of the Turkestan, Zeravshan, and Alay Mountain Ranges, Tajikistan.

Name: Honors Russian mineralogist Yuriy Leonidivich Orlov (1926-1980), former director of the A.E. Fersman Mineralogical museum (1976-1980), specialist in the mineralogy of diamonds.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (3824/1).

References: (1) Agakhanov, A.A., L.A. Pautov, V.Yu. Karpenko, G.K. Bekenova, and Yu.A. Uvarova. (2011) Orlovite, $KLi_2TiSi_4O_{10}(OF)$, a new mineral of the mica group. New data on minerals, 46, 13-19. (2) (2012) Amer. Mineral., 97, 2069-2070 (abs. ref. 1).