Kamenevite $K_2TiSi_3O_9 \cdot H_2O$

Crystal Data: Orthorhombic. *Point Group*: 222. As equant or rectangular lamellar crystals flattened on [010] to 0.3 mm; as aggregates to 0.7 mm.

Physical Properties: *Cleavage*: Good on {010}. *Fracture*: Stepped. *Tenacity*: Brittle. Hardness = ~4 D(meas.) = 2.69(2) D(calc.) = 2.698

Optical Properties: Transparent. *Color*: Colorless, white in aggregates. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (-). α = 1.650(4) β = 1.678(5) γ = 1.685(5) 2V(meas.) = 60(10)° 2V(calc.) = 52° *Orientation*: $Y = b$.

Cell Data: Space Group: $P2_12_12_1$. a = 9.9166(4) b = 12.9561(5) c = 7.1374(3) Z = 4

X-ray Powder Pattern: Oleniy Ruchey mine, Mt. Suoluaiv, Kola Peninsula, Russia.
2.954 (100), 5.823 (95), 2.988 (84), 7.92 (70), 2.834 (69), 2.906 (68), 6.51 (47)

Chemistry:

	(1)	(2)
Na_2O	0.48	
K_2O	24.37	25.30
CaO	0.13	
Fe_2O_3	0.35	
SiO_2	48.78	48.41
TiO_2	20.30	21.45
ZrO_2	0.89	
Nb_2O_5	0.35	
H_2O	[4.85]	4.84
Total	100.50	100.00

(1) Oleniy Ruchey mine, Mt. Suoluaiv, Khibiny complex, Kola Peninsula, Russia; average of 4 electron microprobe analyses, H_2O calculated from structure analysis; corresponds to $(K_{1.92}Na_{0.06}Ca_{0.01})_{\Sigma=1.99}(Ti_{0.94}Zr_{0.03}Fe_{0.02}Nb_{0.01})_{\Sigma=1.00}S_{3.01}O_9 \cdot H_2O$. (2) $K_2TiSi_3O_9 \cdot H_2O$.

Occurrence: A late-stage hydrothermal mineral in K-rich peralkaline pegmatites related to rischorrites associated with apatite-nepheline rocks.

Association: Lomonosovite, aegirine, lamprophyllite, pectolite, shafranovskite, ershovite, lovozerite.

Distribution: At the Oleniy Ruchey (Reindeer Stream) mine, Mt. Suoluaiv and the Rasvumchorr mine, Mt. Rasvumchorr, Khibiny complex, Kola Peninsula, Russia.

Name: Honors Russian geologist Evgeniy Arsenievich Kamenev (1934-2017) for his contribution to the geological study and exploration of the Khibiny complex apatite deposits.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (95903).

References: (1) Pekov, I.V., N.V. Zubkova, V.O. Yapaskurt, D.I. Belakovskiy, I.S. Lykova, S.N. Britvin, A.G. Turchkova, and D.Y. Pushcharovky (2019) Kamenevite, $K_2TiSi_3O_9 \cdot H_2O$, a new mineral with microporous titanosilicate framework from the Khibiny alkaline complex, Kola peninsula, Russia. Eur. J. Mineral., 31(3), 557-564. (2) (2020) Amer. Mineral., 105(10), 1603 (abs. ref. 1).