Flinteite K_2ZnCl_4

Crystal Data: Orthorhombic. *Point Group*: *mm*2. As prismatic crystals, to 1.2 mm, and as granular aggregates or crusts, to 5 mm.

Physical Properties: *Cleavage*: Distinct in one direction. *Fracture*: Uneven. *Tenacity*: Brittle. Hardness = ~ 2 D(meas.) = n.d. D(calc.) = 2.49

Optical Properties: Transparent. *Color*: Light green, light yellow, bright greenish yellow, colorless. *Streak*: White. *Luster*: Vitreous.
Optical Class: Biaxial (+). α = 1.573(1) β = 1.574(1) γ = 1.576(1) 2V(meas.) = 40(25)° 2V(calc.) = 71°

Cell Data: *Space Group*: $Pna2_1$. a = 26.8090(10) b = 12.4085(6) c = 7.2512(3) Z = 12

X-ray Powder Pattern: Tolbachik volcano, Kamchatka, Russia.
3.599 (100), 3.629 (98), 5.123 (88), 2.688 (46), 3.133 (35), 2.897 (35), 6.23 (27)

Chemistry:	(1)	(2)
K	24.97	27.40
Tl	5.82	
Co	0.07	
Zn	22.23	22.91
Cl	46.95	49.69
Total	100.04	100.00

(1) First Scoria cone, Tolbachik volcano, Kamchatka, Russia; average of 4 electron microprobe analyses supplemented by Raman spectroscopy; corresponding to $(K_{1.91}Tl_{0.09})_{\Sigma=2.00}Zn_{1.04}Cl_{3.96}$.
(2) K_2ZnCl_4.

Occurrence: Formed as sublimates on basaltic scoria around active volcanic fumaroles, probably as the result of a phase transition when cooling after the extraction of crystals of its protophase.

Association: Langbeinite, calciolangbeinite, aphthitalite, fluoborite, sylvite, halite, arcanite, tenorite, zincite, chubarovite, krasheninnikovite, vanthoffite, wulffite, johillerite, urusovite (Arsenatnaya fumarole, Second scoria cone); belloite, avdoninite, eriochalcite, mellizinkalite, sylvite, halite, carnallite, mitscherlichite, sanguite, chrysothallite, romanorlovite, gypsum, chlorothionite, kainite (Glavnaya Tenoritovaya fumarole, Second scoria cone); and halite, sellaite, fluorite, saltonseaite, chubarovite, hollandite (First Scoria cone).

Distribution: From the First scoria cone and the Arsenatnaya and Glavnaya Tenoritovaya fumaroles, Second scoria cone, Northern Breakthrough of the Great Tolbachik Fissure Eruption, Tolbachik volcano, Kamchatka, Russia.

Name: Honors the Russian crystallographer Evgeniy Evgenievich Flint (1887-1975), Professor of Crystallography, Moscow State University (1925-1930), Professor of Mineralogy and Crystallography, Moscow Geological Prospecting Institute (1930-1962) and Senior Researcher, Institute of Crystallography, USSR Academy of Sciences (1938-1962). He was a specialist in goniometry, X-ray crystallography and compiled a catalogue of pyroelectric and piezoelectric crystals including almost 1000 species.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (94374).

References: (1) Pekov, I.V., N.V. Zubkova, V.O. Yapaskurt, S.N. Britvin, M.F. Vigasina, E.G. Sidorov, and D.Yu. Pushcharovsky (2015) New zinc and potassium chlorides from fumaroles of the Tolbachik volcano, Kamchatka, Russia: mineral data and crystal chemistry. II. Flinteite, K_2ZnCl_4. Eur. J. Mineral., 27, 581-588. (2) (2016) Amer. Mineral., 101, 1713-1714 (abs. ref. 1).