Kokchetavite $KAlSi_3O_8$

Crystal Data: Hexagonal. *Point Group*: n.d. Crystals platy or prismatic, to 7 μm, with well developed (0001) steps and $(10\bar{1}\ 0)$ planes.

Physical Properties: *Cleavage:* n.d. *Tenacity:* n.d. *Fracture:* n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 2.45

Optical Properties: n.d. *Color:* n.d. *Streak:* n.d. *Luster:* n.d.
Optical Class: Biaxial (n.d.).

Cell Data: Space Group: n.d. a =5.27(1) c = 7.82(1) Z = 1

X-ray Powder Pattern: Kokchetav Massif, northern Kazakhstan. (selective area diffraction pattern) 7.82(001), 4.56(100), 3.93(101), 2.98(102), 2.63(110), 2.51(111), 2.26(103), 1.80(104), 1.72(210), 1.68(211)

Chemistry:

	(1)
SiO_2	64.6
Al_2O_3	18.0
K_2O	15.5
Na_2O	< 0.3
Total	100.1

(1) Kokchetav Massif, northern Kazakhstan; average of several EDS analyses, Raman spectroscopic analysis similar to sanidine, IR spectroscopy confirms absence of OH^- and H_2O; stated to be close to $KAlSi_3O_8$.

Polymorphism & Series: A metastable polymorph of orthoclase, microcline and sanidine.

Mineral Group: Feldspar group.

Occurrence: As inclusions in clinopyroxene and garnet within ultrahigh-grade granitic and biotite gneiss (estimated 900-1000^o C and 5.8-6.5 GPa).

Association: Diopside, grossular-rich garnet, phengite mica, potassium feldspar, pyrrhotite, cristobalite, quartz, titanite, zircon, talc.

Distribution: From Kumdy-Kol, Kokchetav Massif, northern Kazakhstan.

Name: For the locality of the first specimens, the Kokchetav Massif.

Type Material: National Museum of Natural Science, Taichung, (Taiwan) Republic of China (NMNS004438-P010220).

References: (1) Hwang, S.-L., P. Shen, H.-T. Chu,T.-F. Yui, J.G. Liou, N.V. Sobolev, R.-U. Zhang, V.S. Shatsky, and A.A. Zayachkovsky (2004) Kokchetavite: a new potassium-feldspar polymorph from the Kokchetav ultrahigh-pressure terrain. Contrib. Mineral. Petrol., 148, 380-389. (2) (2005) Amer. Mineral., 90, 1228-1229 (abs. ref. 1). (3) Hwang, S.-L., T.-F. Yui, H.-T. Chu, P. Shen, J.G. Liou, and N.V. Sobolev (2013) Oriented kokchetavite compound rods in clinopyroxene of Kokchetav ultrahigh-pressure rocks. Journal of Asian Earth Sciences, 63, 56–69.