Dzharkenite $FeSe_2$

Crystal Data: Cubic. *Point Group:* $2/m\ \overline{3}$. As octahedral crystals, may be modified by the dodecahedron, to 0.5 mm.

Physical Properties: *Fracture:* Uneven. *Tenacity:* Brittle. Hardness = n.d.
VHN = 253–388, 338 average (20 g load). D(meas.) = n.d. D(calc.) = 7.349

Optical Properties: Opaque. *Color:* Black; pale orange in reflected light. *Streak:* Black.
Luster: Metallic to adamantine.
Optical Class: Isotropic.
R: (400) — , (420) — , (440) 44.6, (460) 43.1, (480) 41.7, (500) 40.8, (520) 41.3, (540) 42.6, (560) 43.8, (580) 45.1, (600) 46.4, (620) 47.7, (640) 49.0, (660) 50.2, (680) 51.5, (700) 52.8

Cell Data: *Space Group:* $Pa3$. a = 5.783(4) Z = 4

X-ray Powder Pattern: Seluchekinskoye deposit, Kazakhstan.
2.588 (100), 2.364 (80), 1.546 (60), 2.888 (50), 1.743 (50), 2.045 (40), 1.1131 (40)

Chemistry:

	(1)	(2)
Fe	26.70	26.13
Cu	0.45	
Co	0.01	
Se	73.32	73.87
Total	100.07	100.00

(1) Seluchekinskoye deposit, Kazakhstan; by electron microprobe, average of six analyses; corresponds to $Fe_{1.02}Se_{1.94}$. (2) $FeSe_2$.

Polymorphism & Series: Dimorphous with ferroselite.

Mineral Group: Pyrite group.

Occurrence: In Se–U ores in quartz-sandstone (Seluchekinskoye deposit, Kazakhstan); in a massive sulfide deposit (Zapadno-Ozernoe deposit, Russia).

Association: Ferroselite, goethite (Seluchekinskoye deposit, Kazakhstan); pyrite, galena, tetrahedrite, metacinnabar, tiemannite, sulfur, gold, selenium (Zapadno-Ozernoe deposit, Russia).

Distribution: From the Seluchekinskoye deposit, near the middle Ili River, southeastern Kazakhstan [TL]. At the Zapadno-Ozernoe Cu–Zn deposit, Southern Ural Mountains, Russia.

Name: For the Dzharkenskaya depression, within which the Seluchekinskoye deposit occurs.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia, 84060.

References: (1) Yashunsky, Y.V., E.G. Ryabeva, M.A. Abranov, and S.D. Rasulova (1995) Dzharkenite $FeSe_2$ – a new mineral. Zap. Vses. Mineral. Obshch., 124(1), 85–90 (in Russian with English abs.). (2) (1996) Amer. Mineral., 81, 1013 (abs. ref. 1). (3) Yakovleva, V.A., E.V. Belogub, and K.A. Novoselov (2003) Supergene iron sulpho-selenides from the Zapadno-Ozernoe copper-zinc massive sulphide deposit, South Urals, Russia: a new solid-solution series between pyrite FeS_2 and dzharkenite $FeSe_2$. Mineral. Mag., 67, 355–361. (4) Pekov, I.V. (1998) Minerals first discovered on the territory of the former Soviet Union. Ocean Pictures, Moscow, 77–78.