Saranovskite $SrCaFe^{2+}_2(Cr_4Ti_2)Ti_{12}O_{38}$

Crystal Data: Hexagonal. *Point Group*: $\bar{3}$. As crude equant crystals to ~2 mm.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Conchoidal. Hardness = 6 VHN = 799-890, 850 average (200 g load). D(meas.) = n.d. D(calc.) = 4.501

Optical Properties: Opaque. *Color*: Black, gray in reflected light. *Streak*: Brownish gray. *Luster*: Submetallic.
Optical Class: *Bireflectance*: Very weak. *Anisotropism*: Weak.
R_1-R_2: (470) 18.4-19.1, (546) 17.6-17.9, (589) 17.4-17.6, (650) 17.2-17.5

Cell Data: *Space Group: R*$\bar{3}$. *a* = 10.3553(2) *c* = 20.7301(4) Z = 3

X-Ray Diffraction Pattern: Rudnaya mine, Glavnoe Saranovskoe deposit, Perm Kray, Middle Urals, Russia
2.881 (100), 2.137 (76), 1.439 (76), 3.398 (75), 1.597 (72), 2.247 (67), 2.842 (65)

Chemistry:

	(1)		(1)
MgO	2.01	Fe_2O_3	[2.19]
CaO	1.43	Y_2O_3	1.56
MnO	0.21	La_2O_3	0.94
FeO	[8.14]	Ce_2O_3	0.91
SrO	3.27	Pr_2O_3	0.14
BaO	2.18	Nd_2O_3	0.35
Al_2O_3	0.53	TiO_2	64.25
Sc_2O_3	0.69	ZrO_2	0.58
Cr_2O_3	10.27	Total	99.65

(1) Rudnaya mine, Glavnoe Saranovskoe deposit, Perm Kray, Middle Urals, Russia; average electron microprobe analysis supplemented by Raman spectroscopy, Fe^{2+}/Fe^{3+} for charge balance; corresponding to $(Sr_{0.55}Ba_{0.25}Ln_{0.10}Ca_{0.10})(Ca_{0.36}Y_{0.25}Ln_{0.16}Fe^{2+}_{0.08}Zr_{0.10}Mn_{0.05})(Fe^{2+}_{1.12}Mg_{0.88})(Cr^{3+}_{2.34}Ti_{2.28}Fe^{2+}_{0.91}Fe^{3+}_{0.11}Al_{0.18}Sc^{3+}_{0.18})(Ti_{5.82}Fe^{3+}_{0.18})Ti_{6.0}O_{38}$.

Mineral Group: Crichtonite group. The Ca(*M*1) and Cr^{3+}(*M*4) dominant analogue of crichtonite.

Occurrence: In a hydrothermal calcite vein.

Association: Chromite, Cr-bearing clinochlore, calcite.

Distribution: From the Rudnaya mine (depth 400 m), Glavnoe Saranovskoe deposit, Sarany, 5 km north of the Laki railway station, Gornozavodskiy district, Perm Kray, Middle Urals, Russia.

Name: For the type locality, the *Saranovsk*oe chromite deposit.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5558/1).

References: (1) Chukanov, N.V., R.K. Rastsvetaeva, O.N. Kazheva, O.K. Ivanov, I.V. Pekov, A.A. Agakhanov, K.V. Van, V.D. Shcherbakov, and S.N. Britvin (2020) Saranovskite, $SrCaFe^{2+}_2(Cr_4Ti_2)Ti_{12}O_{38}$, a new crichtonite-group mineral. Phys. Chem. Minerals, 47(11), 49, 1-11.