Shuiskite-(Cr) $Ca_2CrCr_2[SiO_4][Si_2O_6(OH)](OH)_2O$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As prismatic to acicular crystals to 7 mm, elongated along [010] and slightly flattened on [100]. Commonly in divergent, sheaf-like aggregates. *Twining*: Simple "cruciform twins", with (001) composition plane.

Physical Properties: *Cleavage*: Distinct on {001}. *Tenacity*: Brittle. *Fracture*: Uneven. Hardness = 6 D(meas.) = n.d. D(calc.) = 3.432 Nonfluorescent.

Optical Properties: Transparent to translucent. *Color*: Greenish black, green to light green under daylight; purplish black, purple to grayish purple under incandescent light. *Streak*: Gray-green. *Luster*: Vitreous.
Optical Class: Biaxial (-). $\alpha = 1.757(5)$ $\beta = 1.788(6)$ $\gamma = 1.794(6)$ 2V(meas.) = 45(10)° 2V(calc.) = 46° *Pleochroism* (thicker crystals): Strong, *X* = grayish, *Y* = light grayish green, *Z* = brown. *Absorption* (thicker crystals): $X < Y < Z$. *Pleochroism* (thinner crystals): Weaker, *X* = light grayish to nearly colorless, *Y* = light grayish, Z = light grayish brown. *Absorption* (thinner crystals): $X < Y < Z$. *Dispersion*: Strong, crossed. *Orientation*: $Z \wedge b \approx 12°$.

Cell Data: *Space Group*: *C*2/*m*. $a = 19.2436(6)$ $b = 5.9999(2)$ $c = 8.8316(3)$ $\beta = 97.833(3)°$ Z = 4

X-ray Powder Pattern: Rudnaya Cr mine, Glavnoe Saranovskoe deposit, Middle Urals, Russia. 2.913 (100), 3.783 (75), 2.755 (52), 2.539 (48), 2.470 (39), 4.707 (36), 1.602 (35), 4.759 (34)

Chemistry:

	(1)	(2)
CaO	21.33	20.49
MgO	3.17	
Al_2O_3	5.41	
Cr_2O_3	28.50	41.64
TiO_2	0.18	
SiO_2	33.86	32.93
H_2O	[5.82]	4.94
Total	98.27	100.00

(1) Rudnaya Cr mine, Glavnoe Saranovskoe deposit, Middle Urals, Russia; average electron microprobe and FTIR spectroscopic analyses, H_2O calculated from stoichiometry; corresponds to $Ca_{2.02}(Cr_{0.56}Mg_{0.42})_{\Sigma=0.98}(Cr_{1.43}Al_{0.56}Ti_{0.01})_{\Sigma=2.00}Si_{3.00}O_{10.57}(OH)_{3.43}$.
(2) $Ca_2CrCr_2[SiO_4][Si_2O_6(OH)](OH)_2O$.

Polymorphism & Series: Solid solution series with shuiskite-(Mg).

Mineral Group: Pumpellyite group.

Occurrence: In fracture coatings in chromitite on mine walls.

Association: Calcite, Cr-bearing clinochlore, uvarovite.

Distribution: From the Rudnaya chromite mine (level 280 m), Glavnoe Saranovskoe deposit, Saranovskaya deposits, Sarany, Middle Urals, Russia. Perhaps from the Roche Noire massif, Auvergne-Rhône-Alpes, France (with structural confirmation of Cr allocation).

Name: The suffix identifies the analog of *shuiskite*-(Mg) with Cr dominant in the *X* site.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (5481/1) and the Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 87302).

References: (1) Lykova, I., D. Varlamov, N. Chukanov, I. Pekov, D. Belakovskiy, O. Ivanov, N. Zubkova, and S. Britvin (2020) Chromium members of the pumpellyite group: Shuiskite-(Cr), $Ca_2CrCr_2[SiO_4][Si_2O_6(OH)](OH)_2O$, a new mineral, and shuiskite-(Mg), a new species name for shuiskite. Minerals, 10(5), 390, 1-11.