**Shuiskite-(Cr)**

### 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
D(meas.) = n.d.  
D(calc.) = 3.432  
Nonfluorescent.

### Optical Properties

*Optical Class*: Biaxial (-).  
\[ a = 1.757(5) \quad \beta = 1.788(6) \quad \gamma = 1.794(6) \]

2V(meas.) = 45°  
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. *Dispersion*: Strong, crossed. *Orientation*: \( Z \wedge b \approx 12^\circ \).

### Cell Data
*Space Group*: C2/m.  
\[ a = 19.2436(6) \quad b = 5.9999(2) \quad c = 8.8316(3) \quad \beta = 97.833(3)^\circ \quad Z = 4 \]

### 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

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CaO</td>
<td>21.33</td>
<td>20.49</td>
</tr>
<tr>
<td>MgO</td>
<td>3.17</td>
<td></td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>5.41</td>
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<tr>
<td>Cr₂O₃</td>
<td>28.50</td>
<td>41.64</td>
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<tr>
<td>TiO₂</td>
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<tr>
<td>SiO₂</td>
<td>33.86</td>
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<tr>
<td>H₂O</td>
<td>[5.82]</td>
<td>4.94</td>
</tr>
<tr>
<td>Total</td>
<td>98.27</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Rudnaya Cr mine, Glavnoe Saranovskoe deposit, Middle Urals, Russia; average electron microprobe and FTIR spectroscopic analyses, H₂O calculated from stoichiometry; corresponds to \( \text{Ca}_2\text{Cr}_2\text{Fe}_{0.55}\text{Mg}_{0.45}\text{Si}_3\text{O}_{10.5}(\text{OH})_2\text{O} \).

(2) \( \text{Ca}_2\text{Cr}_2\text{Si}_3\text{O}_{10}[(\text{Si}_2\text{O}_5\text{OH})]((\text{OH})_2\text{O}) \).

### 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), \( \text{Ca}_2\text{Cr}_2\text{Si}_3\text{O}_{10}[(\text{Si}_2\text{O}_5\text{OH})]((\text{OH})_2\text{O}) \), a new mineral, and shuiskite-(Mg), a new species name for shuiskite. Minerals, 10(5), 390, 1-11.