**Chenmingite**

**FeCr₂O₄**

**Crystal Data:** Orthorhombic.  *Point Group:* 2/m 2/m 2/m.  As lamellae (< 1 μm wide and to 4 μm long) within precursor chromite grains.

**Hardness:** Polishing hardness greater than chromite.  
**D(meas.):** n.d.  
**D(calc.):** 5.27(2)

*Luster:* n.d.  
**Optical Class:** n.d.  
Optically not distinguishable from chromite.

**Cell Data:** Space Group: *Pnma.*  
*a* = 9.715(6)  
*b* = 2.87(1)  
*c* = 9.49(7)  
*Z* = 4

**X-ray Powder Pattern:** Tissint martian meteorite.  
2.6724 (100), 2.3867 (49), 2.6374 (37), 2.0713 (28), 1.585 (23), 1.2619 (21), 2.366 (20)

**Chemistry:**

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cr₂O₃</td>
<td>57.5</td>
<td>67.90</td>
</tr>
<tr>
<td>Al₂O₃</td>
<td>7.1</td>
<td></td>
</tr>
<tr>
<td>TiO₂</td>
<td>0.70</td>
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</tr>
<tr>
<td>FeO</td>
<td>29</td>
<td>32.10</td>
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<tr>
<td>MgO</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MnO</td>
<td>0.62</td>
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</tr>
<tr>
<td>Total</td>
<td>98.92</td>
<td>100.00</td>
</tr>
</tbody>
</table>

(1) Tissint martian meteorite; average of 15 electron microprobe analyses, Fe²⁺/Fe³⁺ from M₃O₄ stoichiometry; corresponds to (Fe⁵⁺₀.⁷₅Mg₀.₂₅Mn₀.₀₂)₂₋₁.₀₀(Cr₁₆₀.₆₀Al₀.₆₀Fe³⁺₀.₀₀Fe²⁺₀.₀₄Ti₀.₀₂)Σ=2.₀₁O₄.  
(2) FeCr₂O₄.

**Occurrence:** Formed by solid-state transformation of precursor chromite, near shock-induced melt pockets, under high pressure and high temperature during the Tissint impact event on Mars.

**Association:** Chromite, xieite, Fe, Cr-rich ulvöspinel.

**Distribution:** From the Tissint martian meteorite, an olivine-phyric shergottite.

**Name:** Honors Ming Chen, a cosmochemist and mineralogist, Guangzhou Institute of Geochemistry, Chinese Academy of Sciences, China, for his outstanding contributions to research on high-pressure mineralogy of meteorites, shock metamorphism, and terrestrial impact craters.

**Type Material:** Meteorite Collection, Frank H. McClung Museum, University of Tennessee, Knoxville, Tennessee, USA (Tissint section UT2).