## Tistarite $Ti_2O_3$

**Crystal Data**: Hexagonal. *Point Group*: $\bar{3}$ 2/*m*. As a single ~5 × 7 $\mu$m grain.

**Physical Properties**: *Cleavage*: n.d. *Fracture*: n.d. *Tenacity*: n.d. Hardness = n.d.
D(meas.) = n.d. D(calc.) = 4.53

**Optical Properties**: Opaque. *Color*: Gray in reflected light. *Streak*: n.d. *Luster*: n.d.
*Optical Class*: n.d.

**Cell Data**: *Space Group*: $R\bar{3}$ *c*. *a* = 5.158 *c* = 13.611 Z = 6

**X-ray Powder Pattern**: Calculated for synthetic $Ti_2O_3$.
1.703 (100), 2.579 (90), 2.707 (88), 3.734 (84), 1.489 (46), 2.242 (38), 1.867 (33)

**Chemistry**:

| | (1) |
|---|---|
| $Ti_2O_3$ | 94.94 |
| MgO | 2.06 |
| $Al_2O_3$ | 1.50 |
| $ZrO_2$ | 0.44 |
| FeO | 0.24 |
| CaO | 0.10 |
| $Cr_2O_3$ | 0.06 |
| $HfO_2$ | 0.02 |
| Total | 99.36 |

(1) Allende meteorite; average electron microprobe analysis supplemented by Raman spectroscopy; corresponding to $(Ti^{3+}_{1.90}Mg_{0.07}Al_{0.04}Zr_{0.01})_{\Sigma=2.02}O_3$.

**Mineral Group**: Corundum-hematite group.

**Occurrence**: In a ferromagnesian chondrule in a CV3 carbonaceous chondrite meteorite.

**Association**: Khamrabaevite, rutile, corundum, mullite.

**Distribution**: In the Allende meteorite.

**Name**: *Ti* for the essential titanium in the compound and the word *star*, implying that this refractory mineral is among the first solids formed in the solar system at the birth of our star.

**Type Material**: National Museum of Natural History, Washington D.C., USA (USNM 3510-6).

**References**: (1) Ma, C. and G.R. Rossman (2009) Tistarite, $Ti_2O_3$, a new refractory mineral from the Allende meteorite. Amer. Mineral. 94, 841-844.