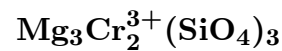


# Knorringite



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**Crystal Data:** Cubic. *Point Group:*  $4/m\bar{3}2/m$ . Massive and as minute grains.

**Physical Properties:** Hardness =  $\sim 7$   $D(\text{meas.}) = 3.756$   $D(\text{calc.}) = 3.852$

**Optical Properties:** Semitransparent. *Color:* Bluish green, greenish. *Luster:* Vitreous.

*Optical Class:* Isotropic.  $n = 1.803$

**Cell Data:** *Space Group:*  $Ia\bar{3}d$ .  $a = 11.65$   $Z = 8$

**X-ray Powder Pattern:** Kao kimberlite pipe, Lesotho.

2.92 (100), 2.61 (100), 2.382 (80), 1.560 (80), 2.489 (60), 2.288 (60), 1.894 (60)

**Chemistry:**

	(1)	(2)
SiO <sub>2</sub>	39.92	39.78
TiO <sub>2</sub>	0.11	
Al <sub>2</sub> O <sub>3</sub>	9.74	
Cr <sub>2</sub> O <sub>3</sub>	17.47	33.54
Fe <sub>2</sub> O <sub>3</sub>	1.20	
FeO	6.53	
MnO	0.60	
MgO	16.97	26.68
CaO	8.14	
Total	100.68	100.00

(1) Kao kimberlite pipe, Lesotho; by electron microprobe, corresponding to  $(\text{Mg}_{1.90}\text{Ca}_{0.66}\text{Fe}_{0.41}^{2+}\text{Mn}_{0.17})_{\Sigma=3.14}(\text{Cr}_{1.04}\text{Al}_{0.86}\text{Fe}_{0.07}^{3+})_{\Sigma=1.97}\text{Si}_{3.01}\text{O}_{12}$ . (2)  $\text{Mg}_3\text{Cr}_2(\text{SiO}_4)_3$ .

**Polymorphism & Series:** Forms a series with pyrope.

**Mineral Group:** Garnet group.

**Occurrence:** A rare component of ultramafic kimberlite nodules (Kao kimberlite pipe, Lesotho).

**Association:** Olivine, enstatite, chromian diopside, chromian pyrope, chromian spinel, ilmenite, perovskite, zircon, diamond, omphacite, rutile, carbonates, micas (Kao kimberlite pipe, Lesotho).

**Distribution:** In the Kao kimberlite pipe, Lesotho. From the Red Ledge mine, Nevada Co., California, USA.

**Name:** To honor Dr. Oleg von Knorring (1915–1994), Department of Earth Sciences, Leeds University, Leeds, England.

**Type Material:** n.d.

**References:** (1) Nixon, P.H. and G. Hornung (1968) A new chromium garnet end member, knorringite, from kimberlite. *Amer. Mineral.*, 53, 1833–1840. (2) Nixon, P.H., O. von Knorring, and J.M. Rooke (1963) Kimberlites and associated inclusions of Basutoland: a mineralogical and geochemical study. *Amer. Mineral.*, 48, 1090–1132.