## Schreyerite $V_2^{3+}Ti_3O_9$



**Crystal Data:** Monoclinic. *Point Group:* n.d. As lamellae and grains, to 30 $\mu$m, exsolved within rutile crystals. *Twinning:* Polysynthetic, universal.

**Physical Properties:** Hardness = n.d. VHN = 1100–1200 D(meas.) = n.d. D(calc.) = [4.46]

**Optical Properties:** Opaque. *Color:* Reddish brown; gray in reflected light. *Optical Class:* Biaxial. $n = 2.7$ *Pleochroism:* Weak; yellow-brown to reddish brown. *Anisotropism:* Moderate. *Bireflectance:* White to brownish. R: (546) 21

**Cell Data:** *Space Group:* n.d. $a = 7.06(1)$ $b = 5.024(3)$ $c = 18.84(3)$ $\beta = 119.68(7)°$ Z = [4]

**X-ray Powder Pattern:** Lasamba Hill, Kenya. 2.737 (vs), 2.874 (s), 4.075 (m), 3.381 (m), 2.432 (w), 2.518 (vvw), 2.310 (vvw)

**Chemistry:**

| | (1) | (2) | (3) |
|---|---|---|---|
| $TiO_2$ | 61.07 | 60.95 | 61.52 |
| $Al_2O_3$ | 0.43 | 0.30 | |
| $V_2O_3$ | 35.93 | 33.80 | 38.48 |
| $Cr_2O_3$ | 2.23 | 2.45 | |
| FeO | 0.10 | 1.25 | |
| MnO | | 0.18 | |
| MgO | 0.11 | | |
| Total | 99.87 | 98.93 | 100.00 |

(1) Lasamba Hill, Kenya; by electron microprobe, average of six analyses, total Fe as FeO; corresponds to $(V_{1.86}Cr_{0.12}Al_{0.02})_{\Sigma=2.00}Ti_3O_9$. (2) Sätra, Sweden; by electron microprobe, average of four analyses, total Fe as FeO; corresponds to $(V_{1.8}Cr_{0.2})_{\Sigma=2.0}Ti_3O_9$. (3) $V_2Ti_3O_9$.

**Polymorphism & Series:** Dimorphous with kyzylkumite.

**Occurrence:** In quartz-biotite-sillimanite-diopside-epidote gneiss in contact with quartzite, formed above 600 °C and 5 kbar (Lasamba Hill, Kenya); in quartzitic schists (Ol'khon Gate Straits, Lake Baikal, Russia).

**Association:** Vanadian rutile, kornerupine, kyanite, sillimanite, muscovite, apatite, tourmaline, graphite, pyrrhotite, chalcopyrite, pentlandite (Lasamba Hill, Kenya); rutile, eskolaite, karelianite, vuorelainenite, olkhonskite (Ol'khon Gate Straits, Lake Baikal, Russia).

**Distribution:** From six km southeast of Lasamba Hill, Kwale district, south of Voi, Kenya. At Komolo, Tanzania. In Sweden, from the Sätra mine, Doverstorp, Bergslagen metallic province. Found 4.5 km south of the Ol'khon Gate Strait, on the western shore of Lake Baikal, Siberia, Russia.

**Name:** To honor Dr. Werner Schreyer (1930– ), Professor of Mineralogy, Ruhr University, Bochum, Germany.

**Type Material:** University of Heidelberg, Heidelberg, Germany; National Museum of Natural History, Washington, D.C., USA, 136230.

**References:** (1) Medenbach, O. and K. Schmetzer (1976) Schreyerit ($V_2Ti_3O_9$), ein neues Vanadium-Mineral aus Kenya. Naturwiss., 63, 293–294 (in German). (2) (1977) Amer. Mineral., 62, 395 (abs. ref. 1). (3) Medenbach, O. and K. Schmetzer (1978) Schreyerite, $V_2Ti_3O_9$, a new mineral. Amer. Mineral., 63, 1182–1186. (4) Zakrzewski, M.A., E.A.J. Burke, and W.J. Lustenhouwer (1982) Vuorelainenite, a new spinel, and associated minerals from the Sätra (Doverstorp) pyrite deposit, central Sweden. Can. Mineral., 20, 281–290. (5) Bernhardt, H.-J., K. Schmetzer, and O. Medenbach (1983) Berdesinskiite, $V_2TiO_5$, a new mineral from Kenya and additional data for schreyerite, $V_2Ti_3O_9$. Neues Jahrb. Mineral., Monatsh., 110–118.