

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. As grains or prismatic platelets to 200 μm , also as star-like twinned aggregates. *Twinning:* Simple (90°) and complex (90° , 45° and 60°) twinning is common.

Physical Properties: *Cleavage:* Good on {010}, imperfect on {001} and {100}. *Fracture:* Even to uneven. *Tenacity:* Brittle. Hardness = 6-7 VHN = 683-977 (100 g load).
D(meas.) = n.d. D(calc.) = 3.84-3865

Optical Properties: Transparent. *Color:* Reddish brown, reddish brown to yellow brown in transmitted light, gray with yellow-brown internal reflections in reflected light.
Streak: Light brown. *Luster:* Adamantine to submetallic. *Pleochroism:* Distinct, light gray to gray.
Optical Class: n.d.
 R_1 - R_2 : (470) 11.7-12.6, (546) 11.6-12.4, (589) 11.6-12.3, 11.4-12.3 (650)

Cell Data: *Space Group:* $Pmma$. $a = 5.4200(6)$ $b = 11.064(1)$ $c = 5.5383(7)$ $Z = 2$

X-ray Powder Pattern: Hatrurim Formation, Hatrurim basin, Israel.
2.677 (100), 2.755 (40), 1.940 (40), 11.12 (19), 1.585 (17), 1.842 (16), 1.559 (16)

Chemistry:	(1)
SiO ₂	0.80
TiO ₂	20.39
ZrO ₂	0.49
Cr ₂ O ₃	0.30
Al ₂ O ₃	8.82
Fe ₂ O ₃	25.03
FeO	0.11
MgO	0.22
CaO	43.75
Total	99.02

(1) Hatrurim Formation, Hatrurim basin, Israel; average of 20 electron microprobe analyses, $\text{Fe}^{3+}/\text{Fe}^{2+}$ by charge balance; corresponding to $(\text{Ca}_{2.992}\text{Sr}_{0.007}\text{LREE}_{0.007})(\text{Ti}_{0.981}\text{Zr}_{0.014}\text{Nb}_{0.001})(\text{Fe}^{3+}_{0.947}\text{Mg}_{0.022}\text{Cr}_{0.012}\text{Fe}^{2+}_{0.012}\text{Mn}_{0.001})(\text{Al}_{0.658}\text{Fe}^{3+}_{0.288}\text{Si}_{0.054})\text{O}_8$.

Occurrence: A major accessory phase in larnite-mayenite metacarbonate rocks formed by combustion metamorphism at very high temperature (1150-1170°C) and low pressure (spurrite-merwinite facies).

Association: Larnite, F-rich mayenite, chromian spinel, ye'elimite, fluorapatite, magnesioferrite.

Distribution: From the Hatrurim Formation, Hatrurim basin, Israel.

Name: Honors Dr. Shulamit Gross (1923-2012), emeritus member of the Geological Survey of Israel. The name is also related to biblical Shulamit, red-haired sweetheart of King Solomon.

Type Material: Mineralogical Museum, St.Petersburg State University (1/19465) and in the Central Siberian Geological Museum, V.S. Sobolev Institute of Geology and Mineralogy, Novosibirsk (VII-87/1), Russia.

References: (1) Sharygin, V.V., B. Lazic, T.M. Armbruster, M.N. Murashko, R. Wirth, I.O. Galuskina, E.V. Galuskin, Y. Vapnik, S.N. Britvin, and A.M. Logvinova (2013) Shulamitite $\text{Ca}_3\text{TiFe}^{3+}\text{AlO}_8$ - a new perovskite-related mineral from Hatrurim Basin, Israel. *Eur. J. Mineral.*, 25(1), 97-111. (2) (2015) *Amer. Mineral.*, 100, 1653-1654 (abs. ref. 1).