

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As platy crystals to 0.3 mm with hexagonal outlines.

Physical Properties: *Cleavage:* None. *Fracture:* n.d. *Tenacity:* Brittle. *Hardness* = 4-5 VHN = 360 (10 g load). *D(meas.)* = n.d. *D(calc.)* = 7.291 (Russia); 7.359 (Israel) Radioactive. Dissolves in 10% HCl.

Optical Properties: Translucent. *Color:* Black; dark red to dark gray with greenish hue in transmitted light; light gray with brown or red internal reflections in reflected light. *Streak:* Dark brown to cherry-red. *Luster:* Submetallic.

Optical Class: Isotropic.

R_i: (470) 10.6, (546) 11.3, (589) 10.4, (650) 9.7

Cell Data: *Space Group:* $Fm\bar{3}m$. *a* = 5.3647(9) *Z* = 2

X-ray Powder Pattern: Upper Chegem caldera, Mt. Vorlan, Kabardino-Balkaria, Russia. 3.105 (100), 1.905 (60), 1.623 (54), 2.690 (34), 1.235 (22), 1.099 (22), 1.203 (21)

Chemistry:	(1)	(2)	(3)
UO ₃	84.06	83.79	83.61
CaO	16.65	16.77	16.39
Fe ₂ O ₃	0.06	0.04	
Total	100.77	100.56	100.00

(1) Upper Chegem caldera, Mt. Vorlan, Kabardino-Balkaria, Russia; average electron microprobe analysis supplemented by Raman spectroscopy. (2) Jabel Harmun, Judean Desert, Palestinian Autonomy, Israel; average of 13 electron microprobe analyses supplemented by Raman spectroscopy corresponds to $\text{Ca}_{1.009}\text{U}^{6+}_{0.989}\text{Fe}^{3+}_{0.002}\text{O}_4$. (3) CaUO_4 .

Occurrence: In a calcareous skarn xenolith in ignimbrite probably transformed by radiation damage to CaUO_4 (Russia). In larnite-spurrite metacarbonate rocks formed by combustion metamorphism at very high temperature (> 1000° C) and low pressure (Israel).

Association: Larnite, chegemite, reinhardbraunsite, lakargiite, rondorfite, wadalite (Russia); larnite, mayenite, ye'elinite, brownmillerite (Israel).

Distribution: From xenolith no. 7, Upper Chegem caldera, Mt. Vorlan, Northern Caucasus, Kabardino-Balkaria, Russia and from the Hatrurim Formation, Jabel Harmun, Judean Desert, Palestinian Autonomy, Israel.

Name: After the locality that produced the first specimens, Mt. Vorlan.

Type Material: A.E. Fersman Mineralogical Museum, Academy of Sciences, Moscow, Russia (3838/1).

References: (1) Galuskin, E.V., T. Armbruster, I.O. Galuskina, B. Lazic, A. Winiarski, V.M. Gazeev, P. Dzierzanowski, A.E. Zadov, N.N. Pertsev, R. Wrzalik, A.G. Gurbanov, and J. Janeczek (2011) Vorlanite $(\text{CaU}^{6+})\text{O}_4$: A new mineral from the Upper Chegem caldera, Kabardino-Balkaria, Northern Caucasus, Russia. *American Mineralogist*, 96, 188-196. (2) Galuskin, E.V., J. Kusz, T. Armbruster, I.O. Galuskina, K. Marzec, Y. Vapnik, and M. Murashko (2013) Vorlanite, $(\text{CaU})^{6+}\text{O}_4$, from Jabel Harmun, Palestinian Autonomy, Israel. *Amer. Mineral.*, 98, 1938-1942.