

ACTINIDES IN GEOLOGY, ENERGY, AND THE ENVIRONMENT

Vorlanite, (CaU⁶⁺)O₄, from Jabel Harmun, Palestinian Autonomy, Israel†

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ABSTRACT

Vorlanite (CaU⁶⁺)O₄ [*Fm* $\bar{3}$ *m*, *a* = 5.3647(9) Å, *V* = 154.40(4) Å³, *Z* = 2] was found in larnite pyrometamorphic rocks of the Hatrurim formation at the Jabel Harmun locality, Judean Desert, Palestinian Autonomy. Vorlanite crystals from these larnite rocks are dark-gray with greenish hue in transmitted light. This color in transmitted light is in contrast to dark-red vorlanite [*Fm* $\bar{3}$ *m*, *a* = 5.3813(2) Å, *V* = 155.834(10) Å³, *Z* = 2] from the type locality Upper Chegem caldera, Northern Caucasus. Heating above 750 °C of dark-gray vorlanite from the Jabel Harmun, as well as dark-red vorlanite from Caucasus, led to formation of yellow trigonal uranate CaUO₄. The unusual color of vorlanite from Jabel Harmun is assumed to be related to small impurities of tetravalent uranium.

Keywords: Vorlanite, structure, Raman spectroscopy, lakargiite, Hatrurim formation, Jabel Harmun, Judean Desert