

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As idiomorphic crystals showing {111} to 200 μm , commonly with tubular inclusions of non-stoichiometric vanadium oxide; as inclusions in hibonite and grossite.

Physical Properties: *Cleavage:* None. *Parting:* Irregular and conchoidal. *Tenacity:* Brittle. *Fracture:* Uneven and splintery. Hardness = 6.5-7 D(meas.) = n.d. D(calc.) = 4.6 Nonfluorescent.

Optical Properties: Opaque. *Color:* Black, light gray in reflected light. *Streak:* Black. *Luster:* Metallic. *Optical Class:* Isotropic.

R: (471.1) 14.1, (548.3) 13.8, (586.6) 13.6, (652.3) 13.7

Cell Data: *Space Group:* $Fd\bar{3}m$. $a = 8.1950(1)$ $Z = 8$

X-Ray Diffraction Pattern: Sierra de Comechingones, San Luis, Argentina. 1.447 (100), 1.023 (87), 2.047 (58), 1.576 (38), 0.836 (35), 1.182 (27), 0.915 (21)

Chemistry:	(1)	(2)	(3)
MnO	0.20	0.33	
CaO		0.66	
MgO	1.82	8.61	
VO	[32.38]	21.42	39.75
V ₂ O ₃	34.83	31.27	
Al ₂ O ₃	29.55	34.45	60.25
Cr ₂ O ₃		0.66	
Ti ₂ O ₃	1.66		
Total	100.44	97.40	100.00

(1) Sierra de Comechingones, San Luis, Argentina; average electron microprobe analysis, VO calculated from stoichiometry; corresponds to $(\text{Al}_{1.09}\text{V}^{2+}_{0.91}\text{V}^{3+}_{0.87}\text{Mg}_{0.08}\text{Ti}^{3+}_{0.04}\text{Mn}_{0.01})_{\Sigma=3}\text{O}_4$, may have limited replacement of V²⁺ by Mg and of V³⁺ by Al. (2) Mt. Carmel, Israel; average electron microprobe analysis; corresponds to $(\text{Al}_{1.23}\text{V}^{2+}_{0.58}\text{V}^{3+}_{0.76}\text{Mg}_{0.39}\text{Ca}_{0.02}\text{Cr}^{3+}_{0.02}\text{Mn}_{0.01})_{\Sigma=3.01}\text{O}_4$. (3) V²⁺Al₂O₄.

Mineral Group: Spinel supergroup, oxyspinel group and the spinel subgroup.

Occurance: In super-reduced mineral assemblages crystallized from high-temperature melts trapped in corundum aggregates (micro-xenoliths) within picritic-tholeiitic lavas (Mt Carmel).

Association: Hibonite (containing tubular inclusions to 100 μm of metallic vanadium), grossite, gehlenite, aluminum-rich perovskite (Argentina); V-rich hibonite, grossite, krotite, Ca₂Al₃O₆F, fluorite, tubular inclusions of metallic V and V alloys (Mt. Carmel).

Distribution: From Sierra de Comechingones, San Luis, Argentina [TL]. At Mt. Carmel, northern Israel.

Name: Honors Professor Antonio *Della Giusta* (b. 1941), University of Padova, Italy, an expert on the crystal chemistry and cation order-disorder phenomena in spinel group minerals.

Type Material: University of Milan, Italy (MCMGPG-H2017-001), and in the mineral collection of A. and R. Pagano (12794C).

References: (1) Cámara, F., L. Bindi, A. Pagano, R. Pagano, S.E.M. Gain, and W.L. Griffin (2019) Dellagiustaite: A novel natural spinel containing V²⁺. *Minerals*, 9, 4, 1-16.