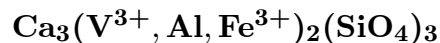


**Goldmanite**

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**Crystal Data:** Cubic. *Point Group:*  $4/m\bar{3}2/m$ . As dodecahedra, to 0.1 mm; in anhedral grains.**Physical Properties:** Hardness = 7 D(meas.) = 3.74–3.77 D(calc.) = 3.765**Optical Properties:** Transparent. *Color:* Dark green to brownish green, commonly sector zoned; green to brown in thin section.*Optical Class:* Isotropic to weakly anisotropic.  $n = 1.821(1)$ **Cell Data:** *Space Group:*  $Ia\bar{3}d$ .  $a = 12.06$   $Z = 8$ **X-ray Powder Pattern:** Sandy mine, New Mexico, USA. 2.688 (100), 3.005 (65), 1.607 (49), 2.453 (38), 1.951 (22), 1.667 (18), 2.357 (16)**Chemistry:**

	(1)	(2)
SiO <sub>2</sub>	36.6	35.58
Al <sub>2</sub> O <sub>3</sub>	4.9	
Fe <sub>2</sub> O <sub>3</sub>	5.4	0.24
V <sub>2</sub> O <sub>3</sub>	18.3	28.66
Cr <sub>2</sub> O <sub>3</sub>		0.88
MnO	0.3	
MgO	0.7	
CaO	33.3	33.06
Total	99.5	98.42

(1) Sandy mine, New Mexico, USA; corresponds to  $(\text{Ca}_{2.91}\text{Mg}_{0.08}\text{Mn}_{0.02})_{\Sigma=3.01}(\text{V}_{1.20}\text{Al}_{0.47}\text{Fe}_{0.33})_{\Sigma=2.00}\text{Si}_{2.99}\text{O}_{12}$ . (2) North Sea; by electron microprobe, corresponds to  $\text{Ca}_{2.98}(\text{V}_{1.94}\text{Cr}_{0.06}\text{Fe}_{0.01}^{3+})_{\Sigma=2.01}\text{Si}_{3.00}\text{O}_{12}$ .

**Mineral Group:** Garnet group.**Occurrence:** In a small metamorphosed U–V deposit in sandstone, embedded in vanadium-rich clays and calcite (Sandy mine, New Mexico, USA); in calcareous metapelites and tungsten-bearing skarns (Coat-an-Noz, France); detrital.**Association:** Quartz, calcite, diopside, vesuvianite, wollastonite, epidote, grossular-andradite, biotite, spinel, plagioclase, pyrrhotite, roscoelite, montmorillonite (Sandy mine, New Mexico, USA); plagioclase, titanite, clinopyroxene, actinolite, chlorite, pyrite, arsenopyrite (Coat-an-Noz, France); rhodonite, braunite (Yamato mine, Japan).**Distribution:** In the Sandy mine, near Laguna, Valencia Co., New Mexico, USA. From Coat-an-Noz, Côtes-du-Nord, France. In a deep well in the United Kingdom sector of the North Sea. From Tetetice, Klatovy, Czech Republic. At Ishimskaya Luka, northern Kazakhstan. From the Slyudyanka complex, Sayan Mountains, near Lake Baikal, Siberia, Russia. In the Yamato mine, Kagoshima Prefecture, Japan.**Name:** For Dr. Marcus Isaac Goldman (1881–1965), American sedimentary petrologist, U.S. Geological Survey.**Type Material:** National Museum of Natural History, Washington, D.C., USA, 121717, 121953.**References:** (1) Moench, R.H. and R. Meyrowitz (1964) Goldmanite, a vanadium garnet from Laguna, New Mexico. *Amer. Mineral.*, 49, 644–655. (2) Novak, G.A. and G.V. Gibbs (1971) The crystal chemistry of the silicate garnets. *Amer. Mineral.*, 56, 791–825. (3) Benkerrou, C. and M. Fonteilles (1989) Vanadian garnets in calcareous metapelites and skarns at Coat-an-Noz, Belle-Isle-en-Terre (Côtes du Nord), France. *Amer. Mineral.*, 74, 852–858. (4) Hallsworth, C.R., A. Livingstone, and A.C. Morton (1992) Detrital goldmanite from the Palaeocene of the North Sea. *Mineral. Mag.*, 56, 117–120.

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