

Vuagnatite

CaAlSiO₄(OH)

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Crystal Data: Orthorhombic. *Point Group:* 222. Highly modified prismatic crystals, to 3 mm, elongated along [001] or [100], rarely as disphenoidal euhedra.

Physical Properties: *Fracture:* Conchoidal. *Tenacity:* Brittle. Hardness = 6
D(meas.) = 3.42(2) D(calc.) = 3.41

Optical Properties: Semitransparent. *Color:* White; colorless in thin section.

Luster: Vitreous.

Optical Class: Biaxial (-). *Pleochroism:* X = colorless or yellowish brown; Y = Z = colorless.

Orientation: X = c; Y = b; Z = a. *Dispersion:* r < v, strong to very strong. *Absorption:* X ≫ Y = Z. α = 1.701(2) β = 1.724(2) γ = 1.727(2) 2V(meas.) = 44(1)°

Cell Data: *Space Group:* P2₁2₁2₁. a = 7.0538(4) b = 8.5410(4) c = 5.6839(3) Z = 4

X-ray Powder Pattern: Red Mountain, California, USA.

2.518 (100), 2.997 (95), 2.640 (85), 2.215 (85), 2.453 (70), 2.142 (65), 2.395 (60)

Chemistry:

	(1)	(2)
SiO ₂	33.59	34.11
Al ₂ O ₃	27.76	28.94
CaO	31.52	31.84
H ₂ O		5.11
Total	92.87	100.00

(1) Taurus Mountains, Turkey; by electron microprobe, average of 25 partial analyses.

(2) CaAlSiO₄(OH); H₂O inferred from structure determination.

Occurrence: In rodingitized dikes of pegmatitic anorthositic gabbro crosscutting harzburgite-serpentine in an ophiolite (Taurus Mountains, Turkey); in rodingitized metagabbro dikes in serpentinized peridotite (Red Mountain, California, USA); all occurrences suggest formation under conditions of relatively low temperature and high pressure.

Association: Chantalite, prehnite, hydrogrossular, vesuvianite, chlorite (Taurus Mountains, Turkey); hydrogrossular, vesuvianite, chlorite, copper, chalcocite (Red Mountain, California, USA).

Distribution: From Böğürtlen Tepe Hill, 10 km northeast of Doğanbaba, Taurus Mountains, Burdur Province, Turkey. At Red Mountain, Mendocino Co., California, USA. In the Livingstone Mountains, Southland, New Zealand. From Shiraki, Toba, Mie Prefecture, Japan. At the Wessels mine, near Kuruman, Cape Province, South Africa.

Name: For Professor Mark Bernard Vuagnat (1922–), student of ophiolites, University of Geneva, Geneva, Switzerland.

Type Material: Natural History Museum, Geneva, 435/1; University of Geneva, Geneva, Switzerland; National Museum of Natural History, Washington, D.C., USA, 146560.

References: (1) Sarp, H., J. Bertrand, and E. McNear (1976) Vuagnatite, CaAl(OH)SiO₄, a new natural calcium aluminum nesosilicate. *Amer. Mineral.*, 61, 825–830. (2) McNear, E., M.G. Vincent, and E. Parthé (1976) The crystal structure of vuagnatite, CaAl(OH)SiO₄. *Amer. Mineral.*, 61, 831–838. (3) Pabst, A., R.C. Erd, F. Goff, and L. Rosenhahn (1977) Vuagnatite from California. *Mineral. Record*, 8, 497–501.