Guanine $C_5H_3(NH_2)N_4O$

Crystal Data: Monoclinic. *Point Group:* $2/m$. Typically as fine-grained granular crusts, to 2 mm in diameter.

Physical Properties: Hardness = "Soft". D(meas.) = n.d. D(calc.) = n.d. M.P. 360 °C.

Optical Properties: Transparent to translucent. *Color:* White.
Optical Class: [Biaxial.] α = n.d. β = n.d. γ = n.d. 2V(meas.) = n.d.

Cell Data: *Space Group:* $P2_1/c$ (synthetic). $a = 16.510$ $b = 11.277$ $c = 3.645$ $\beta = 98.84°$ Z = 4

X-ray Powder Pattern: Synthetic. (ICDD 28-2012).
3.22 (100b), 6.32 (70b), 3.53 (50), 2.63 (50), 2.00 (50), 1.80 (50), 7.9 (40)

Chemistry: (1) Identification is by coincidence of X-ray diffraction pattern with that of synthetic material.

Occurrence: An uncommon component of phosphatic crusts associated with guano from seabirds or bats.

Association: Aphthitalite, biphosphammite, brushite, gypsum, monetite, syngenite, taylorite, hannayite (Murra-el-elevyn Cave, Australia); biphosphammite, archerite, aphthitalite, halite, syngenite, stercorite, oxammite, weddellite, whitlockite, mundrabillaite, newberyite, calcite (Petrogale Cave, Australia).

Distribution: From North Chincha Island, off the coast of Peru. In Australia, in Murra-el-elevyn Cave, Cocklebiddy, and Petrogale Cave, near Madura, Western Australia.

Name: From the Peruvian *guanu*, for *dung*, in allusion to its mode of formation in nature.

References: (1) Bridge, P.J. (1973) Guano minerals from Murra-el-elevyn Cave, Western Australia. Mineral. Mag., 39, 467–469. (2) Bridge, P.J. (1974) Guanine and uricite, two new organic minerals from Peru and Western Australia. Mineral. Mag., 39, 889–890. (3) Bugg, C.E., U.T. Thewalt, and R.E. Marsh (1968) Base stacking in nucleic acid components: the crystal structures of guanine, guanosine and inosine. Biochem. Biophysical Res. Comm., 33(3), 436–440.