Vauquelinite Pb$_2$Cu(PO$_4$)(CrO$_4$)(OH)

Crystal Data: Monoclinic. Point Group: 2/m. Crystals are wedge-shaped, flattened on [100], to 5 mm, as nodules, reniform crusts, granular, compact massive. Twinning: On {102}.

D(meas.) = 6.16 D(calc.) = 6.16

Optical Class: Biaxial (−). Pleochroism: X = pale green; Y = Z = pale brown. α = 2.11(2) β = 2.22(2) γ = 2.22(2) 2V(meas.) = ∼0°

Cell Data: Space Group: P2$_1$/n. a = 13.754(5) b = 5.806(6) c = 9.563(3) β = 94°34(2) Z = 4

X-ray Powder Pattern: Musonoi mine, Congo. 3.271 (100B), 2.986 (80), 4.74 (70), 2.932 (70), 2.768 (70), 2.694 (70), 2.303 (70)

Chemistry:

\begin{align*}
\text{CrO}_3 & : & 15.26 & 14.16 \\
\text{P}_2\text{O}_5 & : & 8.05 & 10.05 \\
\text{Fe}_2\text{O}_3 & : & 1.09 \\
\text{CuO} & : & 12.43 & 11.27 \\
\text{PbO} & : & 61.26 & 63.24 \\
\text{H}_2\text{O} & : & 1.31 & 1.28 \\
\text{Total} & : & 99.40 & 100.00
\end{align*}

(1) Beresovsk, Russia. (2) Pb$_2$Cu(PO$_4$)(CrO$_4$)(OH).

Occurrence: A rare mineral in the oxidized zones of some hydrothermal base-metal deposits.

Association: Crocoite, pyromorphite, mimetite, cerussite, beudantite, duftite (Beresovsk, Russia).

Distribution: At the Tsvetnoi mine, Mt. Uspenskaya, Beresov district, near Yekaterinburg (Sverdlovsk), Middle Ural Mountains, Russia. In Germany, from Öhrenstock, near Ilmenau, Thuringia; at Obercal lenberg, near Glauchau, Saxony; and from Reichenbach, near Bensheim, and Raidelbach, Hesse. At the Exi mine, near Laurium, Greece. In the Mashamba West and Musonoi mines, near Kolwezi, and at Kipushi, 28 km southwest of Lubumbashi, Katanga Province, Congo (Shaba Province, Zaire). In the USA, in Arizona, at a number of localities south and west of Wickenburg, Maricopa Co., as the Moon Anchor mine, the Rat Tail claim, the Potter-Kramer property, Vulture district, the Tonopah-Belmont mine, Osborne district; in the Florence Lead-Silver mine, Tortilla Mountains, Pinal Co.; at the Vanadinite mine, Lost Basin district, Mohave Co.; in Nevada, from the Killie mine, Spruce Mountain district, Elko Co., in the Silver Coin mine, near Valmy, Iron Point district, Humboldt Co., and elsewhere; at the Pequa mine, Lancaster, Lancaster Co., Pennsylvania; from the Blue Bell mine, near Baker, San Bernardino Co., California. At the Argent Pb–Zn mines, about 100 km east of Johannesburg, Transvaal, South Africa. From Broken Hill, New South Wales, Australia. Additional reported localities require modern confirmation.
