Serrabrancaite, MnPO₄·H₂O, a new mineral from the Alto Serra Branca pegmatite, Pedra Lavrada, Paraiba, Brazil

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ABSTRACT

Serrabrancaite is a new manganese phosphate from the Alto Serra Branca pegmatite near Pedra Lavrada, Paraiba, Brazil. The mineral occurs as dark brown to dark greenish black isometric crystals up to 0.3 mm size. The crystals have an adamantine luster and are translucent. Chemical analysis yields (in wt%) Mn_2O_3 = 46.85, P_2O_5 = 42.72, H_2O = 9.8, total = 99.37. The empirical formula is $Mn_{0.98}P_{1.00}O_{3.98} \cdot 0.90 \, H_2O$, simplified to $MnPO_4 \cdot H_2O$. Serrabrancaite is monoclinic, space group $C2/c$, with unit-cell parameters a = 6.914(2), b = 7.468(2), c = 7.364(2) Å, β = 112.29(3)°, V = 351.8(1) Å³. The measured density is 3.17(1) g/cm³, the calculated density for Z = 4 is 3.16 g/cm³. Serrabrancaite is isostructural with the sulfates of the kieserite group. The mineral is an alteration product from a phosphate pegmatite and is accompanied by vernadite and phosphosiderite.