Bertossaite \((\text{Li, Na})_2 \text{CaAl}_4 (\text{PO}_4)_4 (\text{OH, F})_4\)

**Crystal Data:** Orthorhombic. \(\text{Point Group: } 2/m 2/m 2/m.\) Massive.

**Physical Properties:** Cleavage: On \{100\}, good. Fracture: Uneven to subconchoidal. Hardness = 6 \(\text{D(meas.)} = 3.10 \quad \text{D(calc.)} = 3.10\)

**Optical Properties:** Semitransparent. Color: Pale pink; colorless in transmitted light. Luster: Vitreous. Optical Class: Biaxial (\(-\)). Orientation: \(X = a; Y = c; Z = b.\) Dispersion: \(r < v, \text{moderately strong.} \) \(\alpha = 1.624(3) \quad \beta = 1.636(3) \quad \gamma = 1.642(3)\) \(2V(\text{meas.}) = \text{Moderately large.}\) \(2V(\text{calc.}) = 53^\circ\)

**Cell Data:** Space Group: \(\text{Im} \bar{c}b.\) \(a = 11.48(1) \quad b = 15.73(2) \quad c = 7.23(1) \quad Z = 4\)

**X-ray Powder Pattern:** Buranga pegmatite, Rwanda. (ICDD 41-1450). 3.059 (100), 3.104(84), 2.411 (63), 3.295 (60), 2.881 (57), 2.577 (40), 4.32 (33)

**Chemistry:** (1) Buranga pegmatite, Rwanda; an analysis was not published - based on other properties it is stated to be the calcium analog of palermoite, \((\text{Sr, Ca})(\text{Li, Na})_2 \text{Al}_4 (\text{PO}_4)_4 (\text{OH})_4.\)

**Occurrence:** Thought to be formed during a late calcium-rich phase of mineralization in a lithium-bearing granite pegmatite.

**Association:** Amblygonite, lazulite-scorzalite, augelite, brazilianite, apatite, crandallite, trolleite, samuelsonite, quartz.

**Distribution:** In the Buranga pegmatite, near Gatumba, Rwanda.

**Name:** Honoring Antonio Bertossa, Director of the Geological Survey of Rwanda.

**Type Material:** Royal Museum of Central Africa, Tervuren, Belgium, RMB11232; National Museum of Natural History, Washington, D.C., USA, 141000.

**References:** (1) von Knorring, O. and M.E. Mrose (1966) Bertossaite, \((\text{Li, Na})_2 (\text{Ca, Fe, Mn}) \text{Al}_4 (\text{PO}_4)_4 (\text{OH, F})_4,\) a new mineral from Rwanda, Africa. Can. Mineral., 8, 668 (abs.). (2) (1967) Amer. Mineral., 52, 1583 (abs. ref. 1).