

Crystal Data: Hexagonal. *Point Group:* $\bar{3} 2/m$. As microscopic barrel-shaped crystals, elongated along [0001], in earthy to porcelaneous masses.

Physical Properties: Hardness = n.d. $D(\text{meas.}) = \text{n.d.}$ $D(\text{calc.}) = 2.607$

Optical Properties: Semitransparent. *Color:* Grayish yellow, brownish gray, may be pale green from admixture.

Optical Class: Uniaxial (-). $\omega = 1.595$ $\epsilon = 1.455$

Cell Data: *Space Group:* $R\bar{3}m$. $a = 5.3822(4)$ $c = 18.156(2)$ $Z = 3$

X-ray Powder Pattern: Synthetic. (ICDD 25-625).

2.862 (100), 3.02 (35), 1.690 (20), 1.641 (20), 1.044 (20), 0.933 (20), 2.071 (14)

Chemistry: (1) Identification depends primarily on correspondence with the X-ray powder pattern of synthetic material.

Polymorphism & Series: Dimorphous with fairchildite.

Occurrence: Formed in fused wood-ash clinkers in partly burned trees.

Association: Calcite, fairchildite.

Distribution: In the USA, many occurrences in forests from trees struck by lightning. Some studied are: from Kanabowits Canyon, Grand Canyon National Park, Coconino Co., Arizona; in the Kaniksu National Forest, near Coolin, Bonner Co., Idaho; at Long Shop, Montgomery Co., Virginia. From near Eganville and Deseronto, Ontario, Canada.

Name: To honor Johann Adam Otto Bütschli (1848–1920), Professor of Zoology at the University of Heidelberg, Heidelberg, Germany, who studied double salts of potassium and calcium.

Type Material: National Museum of Natural History, Washington, D.C., USA, 105675, 105676.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 230–231. (2) Milton, C. and J. Axelrod (1947) Fused wood-ash stones: fairchildite (n. sp.) $\text{K}_2\text{CO}_3 \cdot \text{CaCO}_3$, bütschliite (n. sp.) $3\text{K}_2\text{CO}_3 \cdot 2\text{CaCO}_3 \cdot 6\text{H}_2\text{O}$ and calcite, CaCO_3 , their essential components. *Amer. Mineral.*, 32, 607–624. (3) Effenberger, H. and H. Langhof (1984) On the aplanarity of the CO_3 group in bütschliite, dipotassium calcium carbonate, $\text{K}_2\text{Ca}(\text{CO}_3)_2$: a further refinement of the atomic arrangement. *Acta Cryst.*, C40, 2999–1300.