Fairchildite $K_2Ca(CO_3)_2$

Crystal Data: Hexagonal. *Point Group:* $6/m\ 2/m\ 2/m$. As microscopic hexagonal plates, flattened on {0001}; typically in dense stony aggregates.

Physical Properties: *Cleavage:* On {0001}, good. Hardness = n.d. D(meas.) = 2.45 D(calc.) = 2.45 Slowly hygroscopic in air, altering to bütschliite, which may then leach to calcite.

Optical Properties: Transparent. *Color:* Colorless; light gray to bluish gray in aggregates. *Optical Class:* Uniaxial (–). $\omega = 1.533$ $\epsilon = 1.498$

Cell Data: *Space Group:* $P6_3/mmc$. $a = 5.294(1)$ $c = 13.355(2)$ $Z = 2$

X-ray Powder Pattern: Synthetic.
3.192 (100), 2.646 (70), 2.699 (30), 2.168 (20), 2.225 (16), 6.67 (14), 2.039 (14)

Chemistry: (1) Analyses of nearly pure natural material apparently do not exist; identification depends on coincidence of other properties with those of synthetic material.

Polymorphism & Series: Dimorphous with bütschliite.

Occurrence: Formed from fused wood ash in partially burned trees.

Association: Bütschliite, calcite.

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

Name: Honors John Gifford Fairchild (1882–1965), analytical chemist, U.S. Geological Survey.

Type Material: National Museum of Natural History, Washington, D.C., USA, 105675, 105676, 162622.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 222. (2) Pertlik, F. (1981) Structural investigations of synthetic fairchildite, $K_2Ca(CO_3)_2$. Zeits. Krist., 157, 199–205. (3) NBS Mono. 25, 8, 48.