Ferruccite $NaBF_4$

Crystal Data: Orthorhombic. *Point Group:* $2/m2/m2/m$. As minute tabular crystals.

Physical Properties: *Cleavage:* {100}, {010}, and {001}. Hardness = ∼3
D(meas.) = 2.496 D(calc.) = 2.5075 (synthetic). Soluble in H_2O, bitter and acid taste.

Optical Properties: Translucent. *Color:* Colorless to white; colorless in transmitted light.
Optical Class: Biaxial (+) (synthetic). *Orientation:* $X = c$; $Y = b$; $Z = a$. $\alpha = 1.301$
$\beta = [1.3012]$ $\gamma = 1.3068$ 2V(meas.) = 11°25′

Cell Data: *Space Group: Cmcm*(synthetic). $a = 6.8368(9)$ $b = 6.2619(7)$ $c = 6.7916(4)$
Z = 4

X-ray Powder Pattern: Synthetic. (ICDD 11-671).
3.39 (100), 3.41 (85), 2.31 (40), 2.84 (25), 3.82 (20), 2.14 (20), 2.03 (20)

Chemistry: Analyses of relatively pure material are not available.

Occurrence: As a fumarolic sublimate.

Association: Sassolite, fluorborates, and fluorsilicates.

Distribution: From Vesuvius, Campania, and on Vucano, Aeolian Islands, Italy. At volcanoes on the Kamchatka Peninsula, Russia.

Name: Honors Professor Ferruccio Zambonini (1880–1932), Italian mineralogist, student of fumarolic minerals.

Type Material: University of Florence, Florence, Italy, 1974/l; National School of Mines, Paris, France; The Natural History Museum, London, England, 1933,419.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 97–99. (2) Brunton, G. (1968) Refinement of the structure of $NaBF_4$. Acta Cryst., 24, 1703–1704.