Bøgvadite $Na_2SrBa_2Al_4F_{2O}$

Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$ or $mm2$. As blocky crystals, to 0.15 mm, showing {110}, {010}, and {012}, slightly flattened on {010} and elongated ‖ [100], with rounded and corroded faces.

Physical Properties: *Fracture:* Uneven. Hardness = > 3 VHN = 300(50) (25 g load). D(meas.) = 3.85 D(calc.) = 3.898

Optical Properties: Transparent. *Color:* Colorless. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Biaxial (–). *Orientation:* $X = c$; $Y = a$; $Z = b$. $\alpha = 1.4326(2)$ $\beta = 1.4360(2)$ $\gamma = 1.4389(2)$ 2V(meas.) = 87(0.5)° 2V(calc.) = 85(6)°

Cell Data: *Space Group:* $Pnmn$ or $Pn2n$. $a = 7.110(3)$ $b = 19.907(10)$ $c = 5.347(3)$ Z = 2

X-ray Powder Pattern: Ivigtut, Greenland.
3.240 (100), 3.194 (50), 2.924 (50), 2.116 (50), 9.968 (40), 6.689 (40), 2.668 (40)

Chemistry:

	(1)	(2)
Na	5.57	5.13
Ba	32.17	30.65
Sr	7.03	9.78
Al	12.45	12.04
F	[42.85]	42.40
Total	[100.07]	100.00

(1) Ivigtut, Greenland; by electron microprobe, average of 11 analyses, F 40%–45%, calculated from stoichiometry; corresponds to $Na_{2.15}Sr_{0.71}Ba_{2.08}Al_{4.09}F_{20}$. (2) $Na_2SrBa_2Al_4F_{2O}$.

Occurrence: In the cryolite deposit.

Association: Jarlite, ralstonite, barite, potassian mica, quartz, a kaolinlike mineral.

Distribution: From the Ivigtut cryolite deposit, southwestern Greenland.

Name: For Richard Bøgvad (1897–1952), formerly Chief Geologist for the company Øresund A/S, which mined the Ivigtut cryolite deposit.

Type Material: n.d.

References: (1) Pauly, H. and O.V. Petersen (1988) Bøgvadite, $Na_2SrBa_2Al_4F_{20}$, a new fluoride from the cryolite deposit, Ivigtut, S. Greenland. Bull. Geol. Soc. Denmark, 37, 21–30. (2) (1991) Amer. Mineral., 76, 1728–1729 (abs. ref. 1).