Bjarebyite  
\((\text{Ba, Sr})(\text{Mn}^{2+}, \text{Fe}^{2+}, \text{Mg})_2\text{Al}_2(\text{PO}_4)_3(\text{OH})_3)\)

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Crystal Data: Monoclinic.  Point Group: 2/m.  As multiply-faceted, steeply-terminated, spearhead-shaped crystals, to 3 mm, with as many as 14 forms discernable. Also as etched and striated prismatic crystals, and fibrous, massive.

Physical Properties:  Cleavage: Perfect on \{010\} and \{100\}.  Hardness = 4
D(meas.) = 3.90–3.95  D(calc.) = 3.92–4.02


Optical Class: Biaxial (+).  Pleochroism: Weak, grayish tan to pale yellow-green; also strong, \(X = \) colorless to pale brownish yellow; \(Y = \) brownish green; \(Z = \) apple-green or olive-green.

Orientation: \(Y = b\); \(Z \wedge c = 7^\circ–8^\circ\).  Dispersion: \(r > v\) to \(r < v\).  \(\alpha = 1.692–1.724\)  \(\beta = 1.695–1.727\)  \(\gamma = 1.710–1.749\)

Cell Data:  Space Group: \(P2_1/m\).  \(a = 8.930(14)\)  \(b = 12.073(24)\)  \(c = 4.917(9)\)

X-ray Powder Pattern: Palermo #1 mine, New Hampshire, USA.

Chemistry:  (1) \(P_2\text{O}_5\)  32.96
\(\text{Al}_2\text{O}_3\)  13.43  13.25
\(\text{Fe}_2\text{O}_3\)  3.30
\(\text{FeO}\)  8.67  5.94
\(\text{MnO}\)  9.56  15.98
\(\text{SrO}\)  1.57
\(\text{BaO}\)  23.69  23.87
\(\text{H}_2\text{O}\)  4.70

Total  100.00

(1) Palermo #1 mine, New Hampshire, USA; by electron microprobe, partial analysis, total Fe as FeO, total Mn as MnO; corresponds to \((\text{Ba}_{1.1}\text{Sr}_{0.1})\Sigma=1.2\text{Al}_{1.6}(\text{Mn}_{0.9}\text{Fe}_{0.9}\text{Mg}_{0.2})\Sigma=2.0(\text{PO}_4)_3(\text{OH})_3\).

Mineral Group: Bjarebyite group.

Occurrence: A rare late stage reaction product of triphylite and amblygonite in complex granite pegmatites.

Association: Palermoite, augelite, childrenite, montebrasite, scorzalite, whitlockite, carbonate-apatite, siderite (Palermo #1 mine, New Hampshire, USA); bertossaite, lazulite-scorzalite, burangaite, trolleite, apatite, quartz (Buranga mine, Rwanda).

Distribution: From the Palermo #1 mine, near North Groton, Grafton Co., New Hampshire, USA. At the Buranga pegmatite, near Gatumba, Rwanda. In the Västanå mine, near Näsnum, Skåne, Sweden.

Type Material: n.d.

Name: Honors Alfred Gunnar Bjareby (1899–1967), Swedish-American student of New England pegmatite minerals, Boston, Massachusetts, USA, who collected the first specimen.


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