

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As equant to prismatic crystals, typically skeletal, to 70  $\mu\text{m}$ .

**Physical Properties:** *Cleavage:* None. *Fracture:* Uneven. *Tenacity:* Brittle. Hardness =  $\sim 4.5$  VHN = 272-458 (20 g load). *D(meas.)* = n.d. *D(calc.)* = 3.39

**Optical Properties:** Translucent. *Color:* Yellowish brown to reddish brown, light gray with yellow-brown to red internal reflections in reflected light. *Streak:* Yellowish brown.

*Luster:* Adamantine. *Anisotropism:* Weak.

*Optical Class:* n.d.

*R<sub>1</sub>-R<sub>2</sub>:* (470) 15.3-16.8, (546) 14.1-15.9, (589) 13.8-15.3, (650) 13.4-14.8

**Cell Data:** *Space Group:*  $P\bar{1}$ . *a* = 8.1758(7) *b* = 9.8292(9) *c* = 6.6940(6)  
 *$\alpha$*  = 105.041(8)<sup>°</sup>  *$\beta$*  = 102.040(8)<sup>°</sup>  *$\gamma$*  = 106.025(8)<sup>°</sup> *Z* = 1

**X-ray Powder Pattern:** Bezmyannyi volcano, Russia.

3.17 (100), 3.09 (94), 3.75 (44), 7.47 (28), 2.039 (28), 3.26 (27), 2.802 (25)

| Chemistry:                     | (1)   | (2)    |
|--------------------------------|-------|--------|
| Na <sub>2</sub> O              | 0.76  |        |
| K <sub>2</sub> O               | 0.05  |        |
| MgO                            | 9.43  | 8.05   |
| CaO                            | 3.57  | 5.60   |
| MnO                            | 0.46  |        |
| NiO                            | 0.11  |        |
| Al <sub>2</sub> O <sub>3</sub> | 3.04  |        |
| Fe <sub>2</sub> O <sub>3</sub> | 23.88 | 31.88  |
| TiO <sub>2</sub>               | 2.42  |        |
| SiO <sub>2</sub>               | 0.20  |        |
| P <sub>2</sub> O <sub>5</sub>  | 0.98  |        |
| V <sub>2</sub> O <sub>5</sub>  | 53.86 | 54.47  |
| Total                          | 98.76 | 100.00 |

(1) Bezmyannyi volcano, Russia; average of 3 electron microprobe analyses; corresponding to Na<sub>0.24</sub>K<sub>0.01</sub>Ca<sub>0.63</sub>Mg<sub>2.30</sub>Mn<sub>0.06</sub>Ni<sub>0.01</sub>Al<sub>0.59</sub>Fe<sup>3+</sup><sub>2.94</sub>Ti<sub>0.30</sub>Si<sub>0.03</sub>P<sub>0.14</sub>V<sub>5.83</sub>O<sub>24</sub>. (2) CaMg<sub>2</sub>Fe<sup>3+</sup><sub>4</sub>(VO<sub>4</sub>)<sub>6</sub>.

**Mineral Group:** Howardevansite group.

**Occurrence:** A sublimate from fumarolic gas deposited on andesitic scoria.

**Association:** Bannermanite, biotite, quartz, (Ti,V)-rich magnetite.

**Distribution:** From the Bezmyannyi volcano, Kamchatka Peninsula, Russia.

**Name:** Honors Professor Nikolay Ivanovich Koksharov (1818-1892), Academician of the Russian Academy of Sciences and former Director of the Russian Mineralogical Society, for his contributions to the mineralogical sciences.

**Type Material:** A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (# 94125).

**References:** (1) Pekov I.V., N.V. Zubkova, V.O. Yapaskurt, P.M. Kartashov, Y.S. Polekhovsky, M.N. Murashko, and D.Y. Pushcharovsky (2014) Koksharovite, CaMg<sub>2</sub>Fe<sup>3+</sup><sub>4</sub>(VO<sub>4</sub>)<sub>6</sub>, and grigorievite, Cu<sub>3</sub>Fe<sup>3+</sup><sub>2</sub>Al<sub>2</sub>(VO<sub>4</sub>)<sub>6</sub>, two new howardevansite-group minerals from volcanic exhalations. *European Journal of Mineralogy*, 26(5), 667-677. (2) (2015) *Amer. Mineral.*, 100, 660-661 (abs. ref. 1).