

**Schäferite****(NaCa<sub>2</sub>)Mg<sub>2</sub>(VO<sub>4</sub>)<sub>3</sub>**

**Crystal Data:** Cubic. *Point Group:*  $4/m\bar{3}2/m$ . As euhedral crystals to 0.15 mm that display dominant {112} with {100} and {110} and in aggregates, which overgrow magnesioferrite.

**Physical Properties:** *Cleavage:* None. *Tenacity:* n.d. *Fracture:* Conchoidal.  
Hardness = ~5      D(meas.) = 3.40      D(calc.) = 3.43

**Optical Properties:** Transparent. *Color:* Orange-red. *Streak:* Yellow. *Luster:* Vitreous.  
*Optical Class:* Isotropic.  $n = 1.94$

**Cell Data:** *Space Group:*  $Ia\bar{3}d$ .  $a = 12.427(2)$        $Z = 8$

**X-ray Powder Pattern:** Bellberg volcano, near Mayen, Eifel district, Germany.  
2.779 (100), 3.108 (44), 1.662 (40), 2.535 (39), 1.723 (26), 2.652 (20)

<b>Chemistry:</b>	(1)
SiO <sub>2</sub>	0.12
V <sub>2</sub> O <sub>5</sub>	53.95
As <sub>2</sub> O <sub>5</sub>	0.10
P <sub>2</sub> O <sub>5</sub>	0.23
FeO	0.08
MnO	0.37
MgO	16.46
CaO	23.44
<u>Na<sub>2</sub>O</u>	<u>4.52</u>
Total	99.27

(1) Bellberg volcano, near Mayen, Eifel district, Germany; electron microprobe analysis; corresponds to (Na<sub>0.73</sub>Ca<sub>0.09</sub>Mg<sub>0.04</sub>Mn<sub>0.03</sub>Fe<sub>0.01</sub>)<sub>Σ=0.90</sub>Ca<sub>2.00</sub>Mg<sub>2.00</sub>[(VO<sub>4</sub>)<sub>2.96</sub>(PO<sub>4</sub>)<sub>0.02</sub>(SiO<sub>4</sub>)<sub>0.01</sub>]<sub>Σ=2.9</sub>.

**Polymorphism & Series:** Series with berzeliite.

**Mineral Group:** Garnet supergroup, berzeliite group.

**Occurrence:** In a small cavity in a silicate xenolith in leucite tephrite lava (Germany); as a sublimate near an active volcanic fumarole (Russia); in metallurgical slags (Greece).

**Association:** Sillimanite, quartz, enstatite, sanidine, cordierite, corundum, mullite, hematite, augite (Germany).

**Distribution:** Bellberg volcano, near Mayen, Eifel district, Germany [TL]. From the Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. At the Lavrion mining district, Greece.

**Name:** Honors Helmut *Schäfer* (b. 1931), an amateur German mineralogist who discovered the mineral.

**Type Material:** Institut für Mineralogie, Ruhr-Universität Bochum, Germany.

**References:** (1) Krause, W., G. Blass, and H. Effenberger (1999) Schäferite, a new vanadium garnet from the Bellberg volcano, Eifel, Germany. *Neues Jahrb. Mineral., Monatshefte*, 1999, 123-124. (2) (1999) *Amer. Mineral.*, 84, 1687 (abs. ref. 1). (3) Pekov, I.V., N.N. Koshlyakova, A.A. Agakhanov, N.V. Zubkova, D.I. Belakovskiy, M.F. Viganina, A.G. Turchkova, E.G. Sidorov, and D.Yu. Pushcharovsky (2021) New arsenate minerals from the Arsenatnaya fumarole, Tolbachik volcano, Kamchatka, Russia. *XV. Calciojohillerite, NaCaMgMg<sub>2</sub>(AsO<sub>4</sub>)<sub>3</sub>*, a member of the alluaudite group. *Mineral. Mag.*, 85, 215-223 [locality]. (4) Grew, E.S., A.J. Locock, S.J. Mills, I.O. Galuskina, E.V. Galuskin, and U. Hålenius (2013) Nomenclature of the garnet supergroup. *Amer. Mineral.*, 98, 785-811.