

**Crystal Data:** Hexagonal. *Point Group:*  $\bar{3}$ . As spherulites, to 200  $\mu\text{m}$ , comprised of plates to 10  $\mu\text{m}$ .

**Physical Properties:** *Cleavage:* Perfect on {001}, micaceous. *Tenacity:* n.d. *Fracture:* n.d. Hardness = 3 D(meas.) = n.d. D(calc.) = 2.56

**Optical Properties:** Transparent. *Color:* Brown. *Streak:* White. *Luster:* Vitreous. *Optical Class:* Uniaxial (-).  $\omega = 1.700(2)$   $\varepsilon = 1.625(2)$  *Pleochroism:* Distinct; *O* = dark brown, *E* = light brown. *Absorption:* *O* < *E*. Yellow to red-brown polarization colors with undulose extinction.

**Cell Data:** *Space Group:*  $P\bar{3}$ .  $a = 11.201(2)$   $c = 10.969(2)$   $Z = 3$

**X-ray Powder Pattern:** Oldoinyo Lengai volcano, Gregory Rift, northern Tanzania. 10.97 (100), 2.724 (20), 5.597 (15), 2.796 (14), 4.993 (8), 3.234 (6), 2.189 (5)

<b>Chemistry:</b>	(1)
Na <sub>2</sub> O	12.71
SiO <sub>2</sub>	0.51
P <sub>2</sub> O <sub>5</sub>	23.07
K <sub>2</sub> O	2.17
CaO	0.76
Mn <sub>2</sub> O <sub>3</sub>	31.46
Fe <sub>2</sub> O <sub>3</sub>	7.52
SrO	0.76
BaO	0.47
CO <sub>2</sub>	[7.34]
<u>H<sub>2</sub>O</u>	<u>[15.22]</u>
Total	101.99

(1) Oldoinyo Lengai volcano, Gregory Rift, northern Tanzania; average of 10 electron microprobe analyses supplemented by IR spectroscopy, Mn valence by XANES, H<sub>2</sub>O and CO<sub>2</sub> calculated from stoichiometry; corresponds to (Na<sub>2.46</sub>K<sub>0.28</sub>Ca<sub>0.08</sub>Sr<sub>0.04</sub>Ba<sub>0.02</sub>) $\Sigma=2.88$ (Mn<sup>3+</sup><sub>2.39</sub>Fe<sup>3+</sup><sub>0.56</sub>) $\Sigma=2.95$ [(PO<sub>4</sub>)<sub>1.95</sub>(SiO<sub>4</sub>)<sub>0.05</sub>] $\Sigma=2.00$ (CO<sub>3</sub>)[O<sub>1.84</sub>(OH)<sub>0.16</sub>] $\Sigma=2.00$ ·5H<sub>2</sub>O.

**Occurrence:** A product of low-temperature, oxidative alteration of gregoryite-nyerereite carbonatitic lavas.

**Association:** Fluorite, khanneshite, barite, magnetite, nyerereite (primary assemblage); calcite, shortite, nahcolite, trona, jacobsite, barytocalcite (secondary assemblage).

**Distribution:** From Oldoinyo Lengai volcano, Gregory Rift, northern Tanzania.

**Name:** Honors Jörg Keller (b. 1938), Emeritus Professor of Institut für Geo- und Umweltnaturwissenschaften, Albert-Ludwigs-Universität, Freiburg, Germany, for his contributions to the study of alkaline rocks and carbonatites, particularly the Oldoinyo Lengai volcano.

**Type Material:** Mineralogical Museum, St. Petersburg State University, St. Petersburg, Russia (19640/1).

**References:** (1) Zaitsev, A.N., S.N. Britvin, A. Kearsley, T. Wenzel, and C. Kirk (2017) Jörgkellerite, Na<sub>3</sub>Mn<sup>3+</sup><sub>3</sub>(PO<sub>4</sub>)<sub>2</sub>(CO<sub>3</sub>)O<sub>2</sub>·5H<sub>2</sub>O, a new layered phosphate-carbonate mineral from the Oldoinyo Lengai volcano, Gregory rift, northern Tanzania. *Mineralogy and Petrology*, 111(3), 373-381. *Mineral. and Petrol.*, 111(3), 373-381. (2) (2018) *Amer. Mineral.*, 103, 333 (abs. ref. 1).