

**Crystal Data:** Orthorhombic, pseudo-hexagonal. *Point Group:* *mm*2. Crystals are flat tabular {001}, stubby rectangular, microcrystals may show “swallow-tail” terminations, to 1 mm. *Twinning:* Always polysynthetically twinned || to [001].

**Physical Properties:** Hardness = n.d. D(meas.) = 2.541(2) D(calc.) = [2.42]

**Optical Properties:** Semitransparent. *Color:* Colorless.

*Optical Class:* Biaxial (-). *Orientation:* X = c; Y = a; Z = b.  $\alpha = 1.511$   $\beta = 1.533$   
 $\gamma = 1.534$   $2V(\text{meas.}) = 29^\circ$

**Cell Data:** *Space Group:* *Cmc*2<sub>1</sub>. *a* = 5.044(3) *b* = 8.809(7) *c* = 12.743(3) *Z* = 4

**X-ray Powder Pattern:** Oldoinyo Lengai volcano, Tanzania.

3.046 (vvs), 6.377 (vs), 4.385 (vs), 2.536 (vs), 2.071 (vs), 3.181 (ms), 2.161 (ms)

Chemistry:	(1)	(2)	(3)
SO <sub>3</sub>	2.1	1.07	
CO <sub>2</sub>	39.0	[39.18]	42.71
P <sub>2</sub> O <sub>5</sub>		0.47	
CaO	22.2	26.11	27.21
SrO	2.0	2.27	
BaO	0.6	0.28	
Na <sub>2</sub> O	26.2	23.56	30.08
K <sub>2</sub> O	7.9	6.96	
F	0.23		
Cl	0.42	0.13	
H <sub>2</sub> O	0.8		
-O = (F, Cl) <sub>2</sub>	0.2	0.03	
Total	101.2	[100.00]	100.00

(1) Oldoinyo Lengai volcano, Tanzania. (2) Do.; by electron microprobe, CO<sub>2</sub> by difference.

(3) Na<sub>2</sub>Ca(CO<sub>3</sub>)<sub>2</sub>.

**Polymorphism & Series:** Trimorphous with natrofairchildite and zemkorite.

**Occurrence:** As phenocrysts in carbonate lavas, persistent due to rapid cooling.

**Association:** Halite, sylvite, fluorite, gregoryite, calcite.

**Distribution:** In Tanzania, from the Oldoinyo Lengai and Kerimasi volcanos.

**Name:** To honor Julius Kambarage Nyerere (1922–1999), President of Tanzania when the mineral was found.

**Type Material:** National Museum of Natural History, Washington, D.C., USA, 113544, 162608.

**References:** (1) (1975) *Amer. Mineral.*, 60, 487–488 (abs. of unpublished data submitted to IMA in 1963). (2) McKie, D. and E.J. Frankis (1977) Nyerereite: a new volcanic carbonate mineral from Oldoinyo Lengai, Tanzania. *Zeits. Krist.*, 145, 73–95. (3) (1978) *Amer. Mineral.*, 63, 600 (abs. ref. 2). (4) Church, A. and A.P. Jones (1995) Silicate-carbonate immiscibility at Oldoinyo Lengai. *J. Petrol.*, 36(4), 869–889.