Merrihueite $(K,Na)_2(Fe^{2+},Mg)_5Si_{12}O_{30}$

Crystal Data: [Hexagonal] (by analogy to osumilite). *Point Group:* $6/m\ 2/m\ 2/m$. In aggregates, to 150 μm, of smaller individuals, as inclusions in enstatite.

Physical Properties: Hardness = n.d. D(meas.) = n.d. D(calc.) = 2.87

Optical Properties: Semitransparent. *Color:* Greenish blue; colorless to greenish blue in thin section, with anomalous blue to purple interference colors.
Optical Class: Uniaxial or anomalously biaxial. *Pleochroism:* Colorless to greenish blue.
n = 1.559–1.592; low to moderate birefringence. 2V(meas.) = 5°–10°

Cell Data: *Space Group:* [$P6/mcc$] (by analogy to osumilite). $a = 10.16(6)$ $c = 14.32(6)$
Z = 2

X-ray Powder Pattern: Mezö-Madaras meteorite; nearly identical to osumilite.
3.73 (100), 2.774 (100), 3.23 (90), 7.13 (80), 2.92 (60), 2.530 (50), 5.03 (30)

Chemistry:

	(1)
SiO_2	61.8
Al_2O_3	0.2
FeO	23.7
MnO	0.5
MgO	4.4
CaO	0.3
Na_2O	2.0
K_2O	3.8
Total	96.7

(1) Mezö-Madaras meteorite; by electron microprobe, corresponding to $(K_{0.94}Na_{0.76}Ca_{0.06})_{\Sigma=1.76}(Fe_{3.85}Mg_{1.27}Mn_{0.08})_{\Sigma=5.20}(Si_{12.00}Al_{0.02})_{\Sigma=12.02}O_{30}$.

Mineral Group: Milarite group; K > (Na+Ca); (Fe+Mn) > Mg; Al/(Al+Si) < 0.2.

Occurrence: Rare, in a few chondules of a chondrite, as inclusions in clinopyroxenes.

Association: Clinoenstatite, fayalitic olivine, nickel-iron.

Distribution: In the Mezö-Madaras chondritic meteorite.

Name: For Craig M. Merrihue (?–1965), meteoriticist, of the Smithsonian Astrophysical Observatory, Cambridge, Massachusetts, USA.

Type Material: n.d.

References: (1) Dodd, R.T., Jr., W.R. Van Schmus, and U.B. Marvin (1965) Merrihueite, a new alkali-ferromagnesian silicate from the Mezö-Madaras chondrite. Science, 149, 972–974. (2) (1965) Amer. Mineral., 50, 2096–2097 (abs. ref. 1). (3) Khan, A.A., W.H. Bauer, and W.C. Forbes (1972) Synthetic magnesian merrihueite, dipotassium pentamagnesium dodecasilicate: a tetrahedral magnesiosilicate framework crystal structure. Acta Cryst., 28, 267–272.