

Crystal Data: Hexagonal. *Point Group:* 3*m*. As anhedral grains to 50 μm.

Physical Properties: *Cleavage:* None. *Fracture:* n.d. *Tenacity:* n.d. Hardness = ~ 5
D(meas.) = 3.14 (Los Angeles) D(calc.) = 3.11

Optical Properties: Transparent. *Color:* Colorless. *Streak:* n.d. *Luster:* Vitreous.
Optical Class: Uniaxial (-). ω = 1.623 ε = 1.621 Also anomalously biaxial with 2V up to 20°.

Cell Data: *Space Group:* R3*c*. a = 10.372(2) c = 37.217(13) Z = 6

X-ray Powder Pattern: Shergotty meteorite/Los Angeles meteorite.
2.861 (100)/2.86 (100), 3.191 (81)/3.19 (60), 2.594 (73)/2.594 (50), 6.46 (33)/6.42 (20),
2.741 (21)/2.747 (20), 1.710 (21)/1.713 (20), 5.196 (20)/5.24 (10)

Chemistry:	(1)	(2)
Na ₂ O	1.7	1.4
CaO	46.8	47.0
MgO	1.5	0.9
FeO	3.5	5.2
<u>P₂O₅</u>	<u>46.2</u>	<u>45.7</u>
Total	99.7	100.2

(1) Shergotty meteorite; average of 8 electron microprobe analyses; corresponds to Ca_{9.00}(Na_{0.60}Ca_{0.07})_{Σ=0.67}(Fe²⁺_{0.53}Mg_{0.40})_{Σ=0.93}P_{7.08}O₂₈. (2) Los Angeles meteorite; average of 10 electron microprobe analyses; corresponds to Ca_{9.00}(Na_{0.49}Ca_{0.15})_{Σ=0.64}(Fe²⁺_{0.78}Mg_{0.23})_{Σ=1.02}P_{7.03}O₂₈.

Occurrence: An accessory phase in the basaltic and olivine-phyric subgroups of shergottite meteorites.

Association: Clinopyroxene, maskelynite (impact-melted plagioclase glass).

Distribution: From the Shergotty and Los Angeles shergottite meteorites.

Name: The Fe²⁺-dominant analogue of *merrillite*.

Type Material: A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (3514/1).

References: (1) Britvin, S.N., S.V. Krivovichev, and T. Armbruster (2016) Ferromerrillite, Ca₉NaFe²⁺(PO₄)₇, a new mineral from the Martian meteorites, and some insights into merrillite-tuite transformation in shergottites. *Eur. J. Mineral.*, 28, 125-136. (2) (2016) *Amer. Mineral.*, 101, 2357 (abs. ref. 1, with comment on the oxidation state of iron).