Pertlikite $K_2(Fe^{2+}, Mg)_2(Mg, Fe^{3+})_4Fe^{3+}{}_2Al(SO_4)12\cdot 18H_2O$

Crystal Data: Tetragonal. *Point Group*: 4/*m* 2/*m* 2/*m*. As crystals to 1 cm.

Physical Properties: *Cleavage*: None. *Tenacity*: Brittle. *Fracture*: Conchoidal. Hardness = n.d. D(meas.) = 2.59(3) D(calc.) = 2.56(1) Non-fluorescent.

Optical Properties: Translucent. *Color*: Dark olive-green to black. *Streak*: Grayish green. *Luster*: n.d.
Optical Class: Uniaxial (-). ω = 1.590(2) ε = 1.586(2)

Cell Data: *Space Group*: $I4_1/acd$. a = 19.2080(3) c = 27.2158(7) Z = 8

X-Ray Diffraction Pattern: Madeni Zakh, Iran.
3.396 (100), 3.038 (39), 2.848 (31), 2.078 (29), 5.543 (28), 3.136 (21), 2.534 (21)

Chemistry:

	(1)
K_2O	4.80
Na_2O	0.02
Al_2O_3	2.64
FeO	[4.20]
Fe_2O_3	[14.78]
ZnO	0.04
MgO	6.26
MnO	0.97
SO_3	49.58
H_2O	16.73
Total	100.02

(1) Madeni Zakh, Iran; average electron microprobe analysis supplemented by Mössbauer spectroscopy to partition total iron to FeO and Fe_2O_3; corresponds to $(K_{1.98}Na_{0.01})_{\Sigma=1.99}{}^{M2}(Fe^{2+}{}_{1.13}Mg_{0.49}Mn^{2+}{}_{0.27}Fe^{3+}{}_{0.10}Zn_{0.01})_{\Sigma=2.00}{}^{M3}(Mg_{2.52}Fe^{3+}{}_{1.49})_{\Sigma=4.01}{}^{M1}Fe^{3+}{}_{2.00}Al_{1.00}(SO_4)_{12.00}\cdot 18H_20$.

Mineral Group: Voltaite group.

Occurrence: In a pyrite-bearing trachytic eruptive rock, and probably formed after the oxidation of pyrite.

Association: Metavoltine, botryogen, pyrite, alunite.

Distribution: From Madeni Zakh, Iran.

Name: Honors Franz *Pertlik* (b. 1943), Professor of Mineralogy and Crystallography, University of Vienna, Austria, for his contributions to the crystal chemistry of minerals.

Type Material: Institute for Mineralogy and Crystallography, University of Vienna, Austria (7813), National Museum of Natural History, Washington, D.C. (NMNH174370) and the Museum of Natural History, Harvard University, Cambridge, Massachusetts (135547), USA.

References: (1) Ertl, A., M.D. Dyar, J.M. Hughes, F. Brandstätter, M.E. Gunter, M. Prem, R.C. Peterson (2008) Pertlikite, a new tetragonal Mg-rich member of the voltaite group from Madeni Zakh, Iran. Can. Mineral., 46, 661-669.