Hiroseite $FeSiO_3$

Crystal Data: Orthorhombic. *Point Group*: 2/*m* 2/*m* 2/*m*. As grains to 8 μm in Fe-bearing periclase, mantled by ringwoodite-ahrensite solid solution.

Physical Properties: *Cleavage*: n.d. *Tenacity*: n.d. *Fracture*: n.d. Hardness = n.d. D(meas.) = n.d. D(calc.) = n.d.

Optical Properties: n.d. *Color*: n.d. *Streak*: n.d. *Luster*: n.d.
Optical Class: n.d.

Cell Data: *Space Group*: *Pnma*. *a* = 5.0016(5) *b* = 7.0031(3) *c* = 4.8460(3) Z = 4

X-ray Powder Pattern: Suizhou chondrite meteorite.
1.740 (100), 1.751 (68), 2.468 (56), 1.407 (33), 1.231 (27), 1.434 (26), 2.423 (18)

Chemistry:

	(1)
Na_2O	0.80
CaO	0.95
MgO	12.64
MnO	0.01
FeO	[26.91]
Fe_2O_3	[6.65]
Al_2O_3	6.49
Cr_2O_3	0.01
SiO_2	45.34
Total	99.80

(1) Suizhou chondrite meteorite; average electron microprobe analysis supplemented by Raman spectroscopy, Fe^{3+}/Fe^{2+} apportioned based on EELS analysis, charge balance, and structure; corresponds to $(Fe^{2+}_{0.44}Mg_{0.37}Fe^{3+}_{0.10}Al_{0.04}Na_{0.03}Ca_{0.02})_{\Sigma=1.00}(Si_{0.89}Al_{0.11})_{\Sigma=1.00}O_3$.

Mineral Group: Perovskite supergroup.

Polymorphism & Series: Bridgmanite-hiroseite series. Fe-rich analog of bridgmanite

Occurrence: In a quenched shock-melted portion of the heavily shocked (<20 GPa; <2000 °C) L6 Suizhou chondrite meteorite, by the transformation of chemically zoned olivine. Perhaps relevant to the mineralogy of Earth's deep interior, it could have a role at the bottom of the Earth's mantle transition zone and within the uppermost lower mantle.

Association: Forsterite $(Mg_{1.79}Fe_{0.19})Si_{1.01}O_4$, pyroxene $(Mg_{0.38\text{-}0.75}Fe_{0.20\text{-}0.40}Na_{0.00\text{-}0.08}Al_{0.00\text{-}0.04}Ca_{0.01\text{-}0.02}Mn_{0.01\text{-}0.02})SiO_3$, taenite, troilite, $MgSiO_3$ glass, Fe-bearing periclase, ringwoodite-ahrensite solid solution, metallic iron (Fe 96.5, Si 3.5 wt%).

Distribution: In the Suizhou chondrite meteorite (fallen on April 15, 1986), at Dayanpo, ~12.5 km southeast of Suizhou, Hubei, China.

Name: Honors Kei *Hirose* (b. 1968) for his fundamental contributions to the discovery of the post-perovskite phase and to the mineralogy of mantle perovskite in general.

Type Material: Natural History Museum Florence, Italy (3238/I).

References: (1) Bindi, L., S.-H. Shim, T.G. Sharp, and X. Xie (2020) Evidence for the charge disproportionation of iron in extraterrestrial bridgmanite. Science Advances, 6(2), eaay7893.
(2) (2020) Amer. Mineral., 105, 1921 (abs. ref. 1).