**Crystal Data**: Orthorhombic. *Point Group*: 2/m 2/m 2/m. As grains to 8  $\mu$ m 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 <sub>2</sub> O | 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 <sub>2</sub>  | 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  $(Mg_{0.38-0.75}Fe_{0.20-0.40}Na_{0.00-0.08}Al_{0.00-0.04}Ca_{0.01-0.02}Mn_{0.01-0.02})SiO_3$ , 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 postperovskite 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).