Laihunite $Fe^{2+}Fe^{3+}_2(SiO_4)_2$

Crystal Data: Monoclinic, pseudo-orthorhombic. *Point Group:* $2/m$. Crystals subhedral, thick tabular to short prismatic, to 1 mm; as anhedral grains.

Physical Properties: *Cleavage:* Perfect on {100} and {010}, two less perfect $\sim\perp$ {100} and intersecting at 60°. Hardness = 5.5–6.5 VHN = 617–833 D(meas.) = 3.967 D(calc.) = 4.11 Moderately magnetic and electromagnetic.

Optical Properties: Opaque, translucent in very thin section. *Color:* Black; gray in reflected light. *Streak:* Pale brown, blackish brown. *Luster:* Submetallic to metallic. *Pleochroism:* Gray to grayish black. *Anisotropism:* Weak.

Cell Data: *Space Group:* $P2_1/b$. $a = 4.805(2)$ $b = 10.189(9)$ $c = 17.403(9)$ $\alpha = 91.0(2)°$ $Z = 12$

X-ray Powder Pattern: Little Lai-He Village, China.
3.488 (10b), 2.521 (10), 2.774 (9), 1.745 (8), 2.405 (7), 2.246 (7), 2.175 (6)

Chemistry:

	(1)
SiO_2	31.07
Fe_2O_3	44.24
FeO	23.64
MgO	0.87
CaO	0.21
Total	100.03

(1) Little Lai-He Village, China; corresponds to $(Fe^{2+}_{1.18}Mg_{0.08})_{\Sigma=1.26}Fe^{3+}_{2.00}(Si_{0.93}O_4)_2$.

Polymorphism & Series: 3M, 2M polytypes.

Occurrence: In a Precambrian metamorphic iron deposit, probably derived by oxidation of fayalite (Little Lai-He Village, China).

Association: Quartz, "hypersthene," magnetite, "hornblende," augite, plagioclase (Little Lai-He, China).

Distribution: At Little Lai-He village, Liaoning Province, China. From Kamitaga, Shizuoka Prefecture, and Yugawara, Kanagawa Prefecture, Japan. In the Cherkassk massif, Kuraminsk, Siberia, Russia. From the St. Peters Dome area, El Paso Co., Colorado, USA.

Name: For the occurrence at Little Lai-He Village, China.

Type Material: n.d.

References: (1) Laihunite Research Group, Guiyang Institute of Geochemistry, Academia Sinica and Geological Team 101, Liaoning Metallurgical and Geological Prospecting Company (1976) Laihunite, a new iron silicate mineral. Geochimica, 2, 95–103 (in Chinese with English abs.). (2) X-ray Laboratory, Guiyang Institute of Geochemistry, Academia Sinica (1976) The crystal structure of laihunite. Geochimica, 2, 104–105 (in Chinese with English abs.). (3) (1977) Amer. Mineral., 62, 1058 (abs. refs. 1 and 2). (4) Ferrifayalite Research Group, Department of Geology, Peking University and Institute of Geology and Mineral Resources, Chinese Academy of Geological Sciences (1976) Ferrifayalite and its crystal structure. Acta Geologica Sinica, 2, 161–175 (in Chinese with English abs.). (5) (1978) Amer. Mineral., 63, 424–425 (abs. ref. 4). (6) Shen, B., O. Tamada, M. Kitamura, and N. Morimoto (1986) Superstructure of laihunite-3M ($\square_{0.40}Fe^{2+}_{0.80}Fe^{3+}_{0.80}SiO_4$). Amer. Mineral., 71, 1455–1460.