Gupeiite Fe_3Si

Crystal Data: Cubic. *Point Group:* $4/m\bar{3}2/m$. As cores of spheres, to 0.5 mm, surrounded by other iron minerals.

Physical Properties: *Tenacity:* Brittle. Hardness = n.d. VHN = 494–514 (50 and 100 g loads). D(meas.) = n.d. D(calc.) = 7.29 Strongly magnetic.

Optical Properties: Opaque. *Color:* Black to steel-gray; grayish white with a yellow tint under reflected light. *Streak:* Black. *Luster:* Metallic.
Optical Class: Isotropic.
R: (402) 48.4, (439) 48.4, (480) 51.0, (495) 51.2, (546) 53.5, (590) 53.4, (624) 53.9, (644) 54.0, (657) 54.3

Cell Data: *Space Group:* $[Fm3m]$(by analogy to synthetic Fe_3Si). $a = 5.670(5)$ $Z = 4$

X-ray Powder Pattern: Yanshan Mountains, China.
1.156 (100), 2.00 (90), 1.003 (70), 1.415 (60), 3.26 (30), 2.83 (30), 1.706 (20)

Chemistry:

	(1)	(2)
Fe	84.8	85.64
Mn	0.70	
Ni	0.8	
Si	13.3	14.36
Total	99.6	100.00

(1) Yanshan Mountains, China; by electron microprobe, average of five analyses; corresponding to $(Fe_{2.97}Ni_{0.03}Mn_{0.02})_{\Sigma=3.02}Si_{0.98}$. (2) Fe_3Si.

Occurrence: Innermost in spheres, surrounded by nickel-iron minerals and their oxidation products, apparently of extraterrestrial origin, found in placers.

Association: Xifengite, kamacite, taenite, magnetite, wüstite, maghemite.

Distribution: In the Yanshan Mountains, Hebei Province, China.

Name: For an eastern passageway, Gupeikou, of the Great Wall of China.

Type Material: Institute of Geology, Chinese Academy of Geological Sciences, Beijing, China.

References: (1) Yu Zuxiang (1984) Two new minerals gupeiite and xifengite in cosmic dusts from Yanshan. Acta Petrologica Mineralogica et Analytica, 3, 231–238 (in Chinese with English abs.). (2) (1986) Amer. Mineral., 71, 228 (abs. ref. 1).