

Crystal Data: Triclinic. *Point Group:* $\bar{1}$. As radiating fan-like or “bow-tie” aggregates to 5 mm composed of intergrown well-terminated bladed crystals not exceeding 2 mm; dominant forms are {001}, {100}, and {101}.

Physical Properties: *Cleavage:* Good on {001}. *Tenacity:* Brittle. *Fracture:* Conchoidal. Hardness = 5.5 D(meas.) = 3.02(2) D(calc.) = 3.01 Nonfluorescent.

Optical Properties: Transparent. *Color:* Pale to dark brown. *Streak:* Pale orange-brown. *Luster:* Vitreous.

Optical Class: Biaxial. $\alpha = 1.667(1)$ $\beta = 1.679(1)$ $\gamma = 1.690(1)$ $2V(\text{meas.}) = 89(2)^\circ$ $2V(\text{calc.}) = 87(5)^\circ$ *Pleochroism:* Strong; X = yellow-brown (greenish tint), Z = dark yellow-brown. *Absorption:* $Z > X$, (Y = n.d.). *Orientation:* $X \wedge b = 20^\circ$ (in γ obtuse), $Y \wedge c = 13^\circ$ (in a acute), $Z = a$.

Cell Data: *Space Group:* $P\bar{1}$. $a = 9.9653(3)$ $b = 13.9171(3)$ $c = 6.5703(2)$ $\alpha = 133.264(1)^\circ$ $\beta = 101.414(1)^\circ$ $\gamma = 66.302(1)^\circ$ $Z = 2$

X-ray Powder Pattern: Daye Fe-Cu-Au mine, near Huangshi, Hubei province, China. 9.072 (100), 8.238 (90), 3.126 (70), 3.095 (70), 2.781 (60), 5.000 (30), 3.192 (30)

Chemistry:	(1)
SiO ₂	44.39
Al ₂ O ₃	0.38
Fe ₂ O ₃	13.94
MgO	0.29
MnO	11.34
CaO	21.91
<u>H₂O</u>	<u>[8.32]</u>
Total	100.57

(1) Daye Fe-Cu-Au mine, near Huangshi, Hubei province, China; average electron microprobe analysis supplemented by IR spectroscopy, H₂O calculated; corresponds to $\text{Ca}_{2.00}(\text{Mn}^{2+}_{0.87}\text{Ca}_{0.12})_{\Sigma=0.99}(\text{Fe}^{3+}_{0.94}\text{Al}_{0.04}\text{Mg}_{0.04})_{\Sigma=1.02}\text{Si}_{4.00}\text{O}_{12}(\text{OH})(\text{H}_2\text{O})_2$.

Occurrence: In a skarn assemblage.

Association: Inesite, natroapophyllite-fluorapophyllite, quartz, pyrite, calcite.

Distribution: At the Daye Fe-Cu-Au mines, near Huangshi, Hubei province, China [TL].

Name: For the province in China where the first specimens were collected.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 83268).

References: (1) Hawthorne, F.C., M.A. Cooper, J.D. Grice, A.C. Roberts, W.R. Cook, JR., and R.I. Lauf (2002): Hubeite, a new mineral from the Daye mine near Huangshi, Hubei Province, China. *Mineral. Rec.*, 33(6), 465-471. (2) (2003) *Amer. Mineral.*, 88, 1177 (abs. ref. 1). (3) Cooper, M.A. and F.C. Hawthorne (2004) The crystal structure of hubeite, a novel sorosilicate mineral. *Can. Mineral.*, 42, 825-834.