Rhodostannite $Cu_2FeSn_3S_8$

Crystal Data: Tetragonal. *Point Group:* $4/m$. Very fine-grained massive, slightly porous.

Physical Properties: Hardness = n.d. VHN = 243–266 (100 g load). D(meas.) = n.d. D(calc.) = 4.79

Optical Properties: Opaque. *Color:* Reddish. *Luster:* Metallic. *Anisotropism:* Distinct, from bluish gray to dark brown.

R_1–R_2: (400) 29.1–30.4, (420) 28.7–29.9, (440) 28.3–29.4, (460) 28.2–29.3, (480) 28.2–29.4, (500) 28.3–29.8, (520) 28.5–30.2, (540) 28.8–30.4, (560) 28.9–30.6, (580) 28.9–30.8, (600) 28.9–30.8, (620) 28.9–30.8, (640) 28.8–30.7, (660) 28.8–30.7, (680) 28.7–30.5, (700) 28.6–30.3

Cell Data: *Space Group:* $I4_1/a$ (synthetic). $a = 7.305(2)$ $c = 10.330(5)$ $Z = 2$

X-ray Powder Pattern: Vila Apacheta, Bolivia.
3.12 (100), 5.93 (60), 2.58 (50), 6.09 (40), 1.819 (30), 1.837 (20), 3.64 (16)

Chemistry:

	(1)	(2)	(3)
Cu	16.0	15.9	15.97
Fe	6.8	6.5	7.02
Sn	45.5	45.4	44.76
S	31.3	32.8	32.25
Total	99.6	100.6	100.00

(1) Vila Apacheta, Bolivia; by electron microprobe, corresponding to $Cu_{2.03}Fe_{0.98}Sn_{3.10}S_{7.89}$.
(2) Do.; by electron microprobe, corresponding to $Cu_{1.98}Fe_{0.92}Sn_{3.02}S_{8.08}$. (3) $Cu_2FeSn_3S_8$.

Occurrence: An alteration product of stannite (Vila Apacheta, Bolivia).

Association: Stannite, pyrite (Vila Apacheta, Bolivia).

Distribution: At Vila Apacheta, Bolivia [TL]. From the Pirquitas deposit, Rinconada Department, Jujuy Province, Argentina. In the Dean mine, southeast of Battle Mountain, Lander Co., Nevada, and in the Campbell mine, Bisbee, Cochise Co., Arizona, USA.

Name: From the Greek for *rose*, in allusion to its color, and for its affinity to stannite.

Type Material: n.d.

References: (1) Springer, G. (1968) Electronprobe analyses of stannite and related tin minerals. Mineral. Mag., 36, 1045–1051. (2) (1969) Amer. Mineral., 54, 1218 (abs. ref. 1). (3) Wang, N. (1975) Investigation of synthetic rhodostannite, $Cu_2FeSn_3S_8$. Neues Jahrb. Mineral., Monatsh., 166–171. (4) Jumas, J.C., E. Philippot, and M. Maurin (1979) Structure du rhodostannite synthétique. Acta Cryst., 35, 2195–2197 (in French with English abs.).