Barquillite $Cu_2(Cd, Fe)GeS_4$

Crystal Data: Tetragonal. *Point Group*: $\bar{4}$ 2*m*. Platy crystals, to 50 μm, commonly in rosettelike aggregates.

Physical Properties: *Cleavage*: None. Hardness = 4-4.5 VHN = 180-300 D(meas.) = n.d. D(calc.) = 4.53

Optical Properties: Opaque. *Color*: In reflected light, gray with a violet tint. *Luster*: Metallic. *Optical Class*: Uniaxial. *Pleochroism*: Very weak. *Anisotropism*: Very weak. *Bireflectance*: Very weak.
R: (400) 24.8, (420) 24.8, (440) 24.7, (460) 24.4, (480) 24.2, (500) 23.8, (520) 23.5, (540) 23.3, (560) 23.2, (580) 23.0, (600) 23.1, (620) 23.1, (640) 23.3, (660) 23.5, (680) 23.3, (700) 22.9

Cell Data: *Space Group*: $I\bar{4}$ 2*m* (by analogy to briartite). a = 5.45(4) c = 10.61(1) Z = 2

X-ray Powder Pattern: Barquilla deposit, Spain.
3.10 (100), 1.92 (80), 1.89 (70), 1.64 (60), 1.60 (20), 2.73 (10)

Chemistry:

	(1)
Ag	0.26
Cu	30.67
Zn	0.09
Cd	20.38
Fe	2.20
Mn	0.43
Sn	0.17
Ge	14.99
Ga	0.05
Sb	0.09
Bi	0.16
S	29.42
Total	98.91

(1) Barquilla deposit, Spain; by electron microprobe, average of 34 analyses, corresponds to $(Cu_{2.10}Ag_{0.01})_{\Sigma=2.11}(Cd_{0.79}Fe_{0.17}Mn_{0.03}Zn_{0.01})_{\Sigma=1.00}(Ge_{0.90}Sn_{0.01})_{\Sigma=0.91}S_{3.98}$.

Mineral Group: Stannite group.

Occurrence: Very rare, in a hydrothermal Sn-Ge-Cd-Cu-Fe vein deposit.

Association: Tetrahedrite, greenockite, chalcopyrite, bornite, mawsonite, stannite, stannoidite, mohite, digenite, sericite.

Distribution: From the Barquilla deposit, southwest Salamanca Province, Spain [TL].

Name: For the village of *Barquill*a, Spain, near the type locality.

Type Material: Museo Geominero, Madrid (MGM-3000) and Department of Geology, Salamanca; Area of Crystallography and Mineralogy, Badajoz, Spain; the Institute for Mineralogy, Ruhr University, Bochum, Germany; Laboratory of Crystallography, Nancy, France.

References: (1) Murciego, A., M.I. Pascua, J. Babkine, Y. Dusausoy, O. Medenbach, and H.-J. Bernhardt (1999) Barquillite, $Cu_2(Cd, Fe)GeS_4$, a new mineral from the Barquilla deposit, Salamanca, Spain. Eur. J. Mineral., 11, 111-117. (2) (1999) Amer. Mineral., 54, 1464 (abs. ref. 1).