Geerite Cu_8S_5

Crystal Data: Hexagonal, pseudocubic. *Point Group:* $\overline{3}$ $2/m$, $3m$ or 32. As coatings and thin platelets, to 15 μm.

Physical Properties: Hardness = < 3.5, softer than sphalerite. VHN = 75–96 (25 g load). D(meas.) = n.d. D(calc.) = 5.61

Optical Properties: Opaque. *Color:* Bluish white in reflected light. *Luster:* Metallic. *Pleochroism:* Weak. *Anisotropism:* Moderate, in yellows.
R_1–R_2: n.d.

Cell Data: *Space Group:* $R\overline{3}m$, $R3m$, or $R32$. a = 3.83 c = 46.84 Z = 1

X-ray Powder Pattern: DeKalb Township, New York, USA.
3.128 (100), 1.918 (50), 1.637 (30), 1.109 (20), 2.712 (10), 1.870 (10), 1.683 (10)

Chemistry:

	(1)	(2)	(3)	(4)
Cu	61.44	76.94	78.1	76.02
Fe			0.4	
Zn			1.0	
S	21.47	26.04	21.1	23.98
Total	82.91	102.98	100.6	100.00

(1) DeKalb Township, New York, USA; by electron microprobe, corresponding to $Cu_{7.22}S_{5.00}$. (2) Do.; by electron microprobe, corresponding to $Cu_{7.46}S_{5.00}$; (1) and (2) represent the range of 27 analyses. (3) Eretria, Greece; by electron microprobe, corresponding to $(Cu_{9.34}Zn_{0.11}Fe_{0.05})_{\Sigma=9.50}S_{5.00}$. (4) Cu_8S_5.

Occurrence: Replacing sphalerite along cleavage traces (DeKalb Township, New York, USA); in a serpentine-hosted magnetite–chromite deposit (Eretria, Greece).

Association: Spionkopite, sphalerite, tetrahedrite, chalcopyrite, malachite, azurite, brochantite, chrysocolla, cervantite, stibiconite, hemimorphite, calcite (DeKalb Township, New York, USA); spionkopite, chalcopyrite, cobalt pentlandite, magnetite, chromite, andradite, chlorite, diopside (Eretria, Greece).

Distribution: In the USA, from DeKalb Township, St. Lawrence Co., New York [TL], and at Cuchillo, Winston district, Sierra Co., New Mexico. From near Eretria, Othris Mountains, Greece. In the Lubin and Rudna copper mines, near Legnica, Zechstein copper district, Lower Silesia, Poland. At the Clara mine, near Oberwolfach, Black Forest, Germany. In southwestern Co. Cork, Ireland. From the Lorena gold deposit, near Cloncurry, Queensland, Australia.

Name: To honor the collector of the original specimens, Adam Geer (1895–1973), of Utica, New York, USA.

Type Material: New York State Museum, Albany, New York; The Natural History Museum, London, England, 1986,482; Queen's University, Kingston, Ontario, Canada; National Museum of Natural History, Washington, D.C., USA, 144186.

References: (1) Goble, R.J. and G. Robinson (1980) Geerite, $Cu_{1.60}S$, a new copper sulfide from Dekalb Township, New York. Can. Mineral., 18, 519–523. (2) (1981) Amer. Mineral., 66, 1274 (abs. ref. 1). (3) Economou, M.I. (1981) A second occurrence of the copper sulfides geerite and spionkopite in Eretria area, central Greece. Neues Jahrb. Mineral., Monatsh., 489–494. (4) Goble, R.J. (1985) The relationship between crystal structure, bonding and cell dimensions in the copper sulfides. Can. Mineral., 23, 61–76.