Černýite Cu_2CdSnS_4

Crystal Data: Tetragonal. *Point Group:* $\bar{4}2m$. Small anhedral grains, up to 200 μm, in aggregates intergrown with stannite and këesterite.

Physical Properties: Hardness = ∼4 VHN = 189 (Tanco mine, Canada); 210 (Hugo mine, USA) (50 g load). D(meas.) = n.d. D(calc.) = 4.776 (Tanco mine, Canada); 4.618 (Hugo mine, USA).

Optical Properties: Opaque. *Color:* Steel-gray. *Streak:* Black. *Luster:* Metallic. *Anisotropism:* Very weak in shades of gray.

R_1–R_2: (470) 24.6 and 25.5, (546) 23.4 and 25.6, (589) 22.3 and 25.0, (650) 22.7 and 24.3. (Tanco mine, Canada and Hugo mine, USA)

Cell Data: *Space Group:* $I\bar{4}2m$. $a = 5.487$ $c = 10.848$ $Z = 2$

X-ray Powder Pattern: Tanco mine, Canada.
3.167 (100), 1.939 (70), 1.662 (50), 1.954 (40),. 1.639 (40), 1.770 (30), 1.257 (30)

Chemistry:

	(1)	(2)	(3)
Cu	28.1	26.5	26.12
Ag		0.02	
Cd	9.3	18.2	23.11
Fe	3.6	1.1	
Zn	4.9	2.0	
Mn	0.06	n.d.	
Sn	26.3	24.9	24.40
S	28.5	26.9	26.37
Total	100.8	99.8	100.00

(1) Hugo mine, USA; by electron microprobe, corresponding to $Cu_{1.99}(Cd_{0.37}Zn_{0.33}Fe_{0.29}Mn_{0.01})_{\Sigma=1.00}Sn_{1.00}S_{4.00}$. (2) Tanco mine, Canada; by electron microprobe, corresponding to $(Cu_{1.99}Ag_{0.01})_{\Sigma=2.00}(Cd_{0.77}Zn_{0.14}Fe_{0.10})_{\Sigma=1.01}Sn_{1.00}S_{4.00}$. (3) Cu_2CdSnS_4.

Mineral Group: Stannite group.

Occurrence: A rare constituent of complex zoned pegmatites, as a component of a very minor sulfide mineral suite.

Association: Pyrrhotite, sphalerite, hawleyite, chalcopyrite, stannite, bismuth, këesterite.

Distribution: In the Hugo [TL] and Peerless mines, near Keystone, Pennington Co., South Dakota, USA. From the Tanco pegmatite at Bernic Lake, southeastern Manitoba, Canada [TL]. In the Barquilla deposit, Salamanca Province, Spain.

Name: To honor Dr. Petr Černý (1934–), Czech-Canadian mineralogist specializing in pegmatites, University of Manitoba, Winnipeg, Canada.

Type Material: University of Manitoba, Winnepeg, 5159, 5160; Canadian Geological Survey, Ottawa, 12119; Royal Ontario Museum, Toronto, Canada, M34728–M34730; Museum of Geology, South Dakota School of Mines, 5098, 5099; National Museum of Natural History, Washington, D.C., USA, 136924.