Proudite $Cu_{0-1}Pb_{7.5}Bi_{9.3-9.7}(S,Se)_{22}$

Crystal Data: Monoclinic. *Point Group:* $2/m$. As elongate to acicular grains or irregular laths.

Physical Properties: *Cleavage:* One good cleavage parallel to grain elongation, a second at an apparent angle of 40° to the first. Hardness = n.d. VHN = 38–87 (50 g load). D(meas.) = n.d. D(calc.) = 7.08

Optical Properties: Opaque. *Color:* Silver-gray; in polished section, creamy white. *Pleochroism:* Strong, from cream-white to white. *Anisotropism:* Strong, from cream-gray to tan. R_1–R_2: n.d.

Cell Data: *Space Group:* $C2/m$. $a = 31.96(1)$ $b = 4.12(1)$ $c = 36.69(3)$ $\beta = 109.52(3)°$ $Z = 4$

X-ray Powder Pattern: Juno mine, Australia.
2.960 (100), 2.059 (86), 3.494 (65), 2.066 (60), 3.834 (48), 3.224 (48), 3.447 (42)

Chemistry:

	(1)	(2)
Cu	0.5	1.38
Pb	33.7	33.78
Bi	43.3	42.39
Se	14.0	12.02
S	9.9	10.43
Total	101.4	100.00

(1) Juno mine, Australia; by electron microprobe, average of 11 analyses; corresponds to $Cu_{0.36}Pb_{7.36}Bi_{9.38}S_{13.97}Se_{8.03}$. (2) "ideal" proudite – $Cu_{1.00}Pb_{7.50}Bi_{9.33}S_{15.00}Se_{7.00}$.

Occurrence: With large, presumably hydrothermal magnetite bodies (Juno mine, Australia).

Association: Gold, junoite, selenian heyrovskýite, krupkaite, magnetite (Juno mine, Australia).

Distribution: In Australia, from the Juno mine, Tennant Creek, Northern Territory [TL]. At Janos, Chihuahua, Mexico.

Name: Honors John S. Proud (1907–1997), a Director of the Peko-Wallsend mining company, developers of the Tennant Creek deposits.

Type Material: n.d.

References: (1) Mumme, W.G. (1976) Proudite from Tennant Creek, Northern Territory, Australia: its crystal structure and relationship to weibullite and wittite. Amer. Mineral., 61, 839–852. (2) Large, R.R. and W.G. Mumme (1975) Junoite, "wittite", and related seleniferous bismuth sulfosalts from Juno mine, Northern Territory, Australia. Econ. Geol., 70, 369–383.