Steverustite $Pb^{2+}_5(OH)_5[Cu^+(S^{6+}O_3S^{2-})_3](H_2O)_2$

Crystal Data: Monoclinic. *Point Group*: 2/*m*. As fibrous to acicular crystals, elongated along [010], bounded by (h0l) faces; in divergent sprays to 1.5 mm.

Physical Properties: *Cleavage*: n.d. *Tenacity*: Brittle. *Fracture*: Splintery. Hardness = n.d. D(meas.) = n.d. D(calc.) = 5.150 Nonfluorescent.

Optical Properties: Transparent. *Color*: Colorless to white. *Streak*: White. *Luster*: Vitreous. *Optical Class*: *n*(calc.) = 1.94

Cell Data: *Space Group*: $P2_1/n$. a = 12.5631(7) b = 8.8963(5) c = 18.0132(11) β = 96.459(1)° Z = 4

X-ray Powder Pattern: Frongoch Pb-Zn mine, Pontryhydrygroes, Ceredigion, Wales. 3.943 (100), 6.897 (80), 3.348 (70), 6.211 (60), 4.797 (60), 3.026 (60), 2.837 (50)

Chemistry:

	(1)	(2)
PbO	72.59	71.95
SO_3	15.78	15.49
Cu_2O	4.47	4.61
S^{2-}	6.32	6.20
H_2O	[4.83]	4.84
$-O = S^{2-}$	3.15	3.09
Total	100.84	100.00

(1) Frongoch Pb-Zn mine, Pontryhydrygroes, Ceredigion, Wales; average electron microprobe analysis supplemented by FTIR spectroscopy, H_2O from structure analysis; corresponds to $Pb^{2+}_{4.99}Cu^+_{0.96}(S^{6+}O_3S^{2-})_{3.03}(OH)_{4.88}(H_2O)_{1.67}$. (2) $Pb^{2+}_5Cu^+(S^{6+}O_3S^{2-})_3(OH)_5(H_2O)_2$.

Occurrence: Secondary by oxidation of galena in cavities in quartz veins.

Association: Galena, covellite, cerussite, anglesite, hemimorphite, sussannite, bechererite, caledonite.

Distribution: From the mine dumps at the Frongoch Pb-Zn mine [TL], Pontryhydrygroes, Upper Llanfihangelly-Creudyn, Ceredigion, Wales. Also in Powys, Wales, at the Nantycar mine dump, Rhayader and the Llangynog mine dump, Llangynog. In Ceredigion, Wales at the Bwlch Glas mine, Talybont,; Hendre Felen mine dump, Ysbyty Ystwyth; Esgair Hir mine dump, Talybont; the Penybach mine dump, Talybont; and the Llechwedd Helyg mine dump, Bontgoch. In Scotland, at Horners Vein dump, the Lady Anne Hopetoun Shaft dump, and the Susanna mine dump, Leadhills, Strathclyde.

Name: Honors Stephen Andrew Rust (b. 1952), a collector of United Kingdom minerals who discovered the mineral at the Frongoch mine.

Type Material: Canadian Museum of Nature, Ottawa, Ontario, Canada (CMNMC 86053).

References: (1) Cooper, M.A., F.C. Hawthorne, and E. Moffatt (2009) Steverustite, $Pb^{2+}_5(OH)_5[Cu^+(S^{6+}O_3S^{2-})_3](H_2O)_2$, a new thiosulphate mineral from the Frongoch mine dump, Devils Bridge, Ceredigion, Wales: description and crystal structure. Mineral. Mag., 73, 235-250. (2) (2010) Amer. Mineral., 95, 208 (abs. ref. 1).