

Crystal Data: Monoclinic. *Point Group:* $2/m$. As striated single plates, to 6 cm, fanlike radiating aggregates, or hemispherical masses of plates; also as coatings, and massive. *Twinning:* Mosaic and polysynthetic intergrowths are probably caused by twinning, producing pseudo-hexagonal individuals by rotation $\perp (41\bar{1})$.

Physical Properties: *Cleavage:* Perfect parallel to plate surfaces, {001}; also {100}, perfect, $\{\bar{1}11\}$, prominent, {111} and {212}, poor. *Tenacity:* Brittle. Hardness = 4 VHN = 231–297 (100 g load). $D(\text{meas.}) = 4.98\text{--}5.34$ $D(\text{calc.}) = [5.46]$

Optical Properties: Opaque. *Color:* Bright gray to iron-black; cream-white in reflected light. *Streak:* Soot-black, with a brownish tint. *Luster:* Metallic. *Optical Class:* Biaxial. *Anisotropism:* Strong. *Birefractance:* Strong; pale yellow to brownish gray.

$R_1\text{--}R_2$: (400) 28.3–28.6, (420) 27.4–30.1, (440) 26.5–31.6, (460) 25.8–32.9, (480) 25.1–33.7, (500) 24.5–34.0, (520) 24.1–34.3, (540) 23.8–34.2, (560) 23.5–34.1, (580) 23.3–33.7, (600) 23.1–33.1, (620) 22.9–32.6, (640) 22.7–32.0, (660) 22.5–31.2, (680) 22.4–30.5, (700) 22.2–29.9

Cell Data: *Space Group:* $C2/m$. $a = 5.58(1)$ $b = 2.877(5)$ $c = 5.875(1)$ $\beta = 104.0(1)^\circ$
Z = 2

X-ray Powder Pattern: Higher Pitts Farm, Somerset, England.
2.71 (10), 2.43 (10), 2.85 (6), 2.24 (5b), 1.613 (4), 1.560 (4), 1.764 (3)

Chemistry:	(1)	(2)	(3)
MnO	48.0	48.2	47.14
CuO	52.2	52.5	52.86
Total	100.2	100.7	100.00

(1) Friedrichroda, Germany; by electron microprobe. (2) Idikel, Morocco; by electron microprobe.
(3) CuMnO₂.

Occurrence: A low-temperature secondary mineral, perhaps indicating a reducing chemical environment.

Association: Psilomelane, hausmannite, malachite, volborthite, barite, calcite, “wad” (Friedrichroda, Germany); cerussite, hydrocerussite, malachite, mendipite, “wad” (Mendip Hills, England).

Distribution: From Friedrichroda, Thuringia, Germany. In England, from the Merehead quarry, near Shepton Mallet, and Higher Pitts Farm, near Priddy, Mendip Hills, Somerset. At Långban and Jakobsberg, Värmland, Sweden. From Idikel and Tachgagalt, 17 km south of Ouarzazate, Anti-Atlas Mountains, Morocco. At Tsumeb, and in the Kombat Cu–Pb–Ag mine, 49 km south of Tsumeb, Namibia. In the USA, from Bisbee, Cochise Co., Arizona; at Calistoga, Napa Co., California; and in the Crescent mine, Crescent Lake, Clallam Co., Washington. From 29 km north of Cleve, Eyre Peninsula, South Australia.

Name: Honors Karl F.H. Credner (1809–1876), German mining geologist and mineralogist.

References: (1) Palache, C., H. Berman, and C. Frondel (1944) Dana’s system of mineralogy, (7th edition), v. I, 722–723. (2) McAndrew, J. (1956) Crystallography and composition of crednerite. Amer. Mineral., 41, 276–287. (3) Gaudefroy, C., J. Dietrich, F. Permingeat, and P. Picot (1966) La crednérite, sa composition chimique et sa signification génétique. Bull. Soc. fr. Minéral., 89, 80–88 (in French).