

**Crystal Data:** Hexagonal. *Point group:* 6/m 2/m 2/m. As platy grains to 2 mm and in aggregates.

**Physical Properties:** *Cleavage:* Perfect on {001}. *Tenacity:* Brittle. *Fracture:* Uneven. Hardness = ~2 VHN = 48.7-66.1, 55.3 average (20 g load). D(meas.) = n.d. D(calc.) = 6.856

Macroscopically, grootfonteinite, plumbonacrite, hydrocerussite, and abellaite look very similar, typically forming aggregates of platy, lustrous and colorless crystals. Reliable differentiation requires X-ray diffraction, possibly combined with electron microprobe analysis.

**Optical Properties:** Translucent. *Color:* Colorless, gray in reflected light with white internal reflections. *Streak:* White. *Luster:* Adamantine.

*Optical Class:* n.d. *Birefractance:* Very weak.

R<sub>1</sub>-R<sub>2</sub>: (400) 11.7-13.9, (420) 11.4-13.6, (440) 11.1-13.3, (460) 10.9-13.1, (470) 10.8-13.0, (480) 10.7-12.9, (500) 10.6-12.8, (520) 10.5-12.7, (540) 10.5-12.6, (546) 10.5-12.6, (580) 10.4-12.5, (589) 10.3-12.5, (600) 10.3-12.4, (620) 10.3-12.4, (640) 10.2-12.3, (650) 10.2-12.3, (660) 10.2-12.2, (680) 10.2-12.2, (700) 10.2-12.1

**Cell Data:** *Space Group:* P6<sub>3</sub>/mmc. *a* = 5.303(1) *c* = 13.770(3) *Z* = 2

**X-ray Powder Pattern:** Kombat mine, Grootfontein district, Otjozondjupa region, Namibia. 3.244 (100), 2.053 (39), 2.652 (30), 4.586 (25), 2.294 (21), 2.627 (12), 4.353 (9)

Chemistry:	(1)	(2)
Na	0.92	
Ca	0.26	
Pb	79.66	82.05
O	16.28	14.78
C	[3.49]	3.17
H	[0.05]	.
Total	100.66	100.00

(1) Kombat mine, Grootfontein district, Otjozondjupa region, northern Namibia; average of 10 electron microprobe analyses, supplemented by IR spectroscopy, C calculated from stoichiometry, H for charge balance; corresponds to H<sub>0.345</sub>Na<sub>0.275</sub>Ca<sub>0.045</sub>Pb<sub>2.645</sub>C<sub>2</sub>O<sub>7</sub>. (2) Pb<sub>3</sub>O(CO<sub>3</sub>)<sub>2</sub>.

**Occurrence:** A product of the regional metamorphism of a Pb-Mn-(As-Ba)-rich, chemically heterogeneous, volcanic-hydrothermal assemblage.

**Association:** Jacobsite, cerussite, dolomite, clinocllore, hausmannite, melanotekite, sahlinite, rhodochrosite, barite.

**Distribution:** From the Kombat mine, Grootfontein district, Otjozondjupa region, northern Namibia.

**Name:** For the *Grootfontein* district, in which the mine that provided the first specimens is located.

**Type Material:** Swedish Museum of Natural History, Stockholm, Sweden (20080176).

**References:** (1) Siidra, O.I., E. Jonsson, N.V. Chukanov, D.O. Nekrasova, I.V. Pekov W. Depmeier, Y.S. Polekhovskiy, and V.O. Yapaskurt (2018) Grootfonteinite, Pb<sub>3</sub>O(CO<sub>3</sub>)<sub>2</sub>, a new mineral species from the Kombat Mine, Namibia, merotypically related to hydrocerussite. *Eur. J. Mineral.*, 30(2), 383-391. (2) (2018) *Amer. Mineral.*, 103, 2041-2042 (abs. ref. 1).