

**Crystal Data:** Triclinic. *Point Group:*  $\bar{1}$ . As thick tabular to short prismatic crystals, with rounded edges, to 2 cm.

**Physical Properties:** *Cleavage:* Perfect on {201}; good on {021} and {210}. *Tenacity:* Brittle. *Fracture:* Stepped. Hardness = 6 D(meas.) = 3.71(2) D(calc.) = 3.701

**Optical Properties:** Transparent to translucent. *Color:* Brown-red to pinkish brown, colorless in transmitted light. *Streak:* White. *Luster:* Vitreous.

*Optical Class:* Biaxial (+).  $\alpha = 1.731(4)$   $\beta = 1.736(4)$   $\gamma = 1.745(5)$   $2V(\text{meas.}) = 80(10)^\circ$   $2V(\text{calc.}) = 74^\circ$  *Dispersion:* Distinct,  $r < v$ .

**Cell Data:** *Space Group:*  $P\bar{1}$ .  $a = 6.6766(5)$   $b = 7.6754(6)$   $c = 11.803(1)$   $\alpha = 105.501(1)^\circ$   $\beta = 92.275(1)^\circ$   $\gamma = 93.919(1)^\circ$   $Z = 1$

**X-ray Powder Pattern:** Broken Hill, New South Wales, Australia.

2.968 (100), 2.770 (91), 3.132 (54), 3.091 (41), 2.223 (34), 3.337 (32), 2.173 (30)

<b>Chemistry:</b>	(1)
SiO <sub>2</sub>	46.48
FeO	14.46
MnO	32.32
MgO	0.24
ZnO	0.36
CaO	7.09
Total	100.95

(1) Broken Hill, New South Wales, Australia; average of 4 electron microprobe analyses supplemented by IR and Mössbauer spectroscopy; corresponds to Ca<sub>0.81</sub>Mn<sub>2.92</sub>Fe<sub>1.29</sub>Mg<sub>0.04</sub>Zn<sub>0.03</sub>Si<sub>4.96</sub>O<sub>15</sub>.

**Occurrence:** Forms during granulite facies metamorphism of a manganese-rich sedimentary exhalative lead-zinc-silver deposit.

**Association:** Galena, chalcopyrite, spessartine, quartz.

**Distribution:** From the Broken Hill Pb-Zn-Ag deposit, Yancowinna Co., New South Wales, Australia.

**Name:** As an analog of *rhodonite* with Fe<sup>2+</sup> dominant in the M4 site of the structure.

**Type Material:** Mineralogical Museum, University of Hamburg, Germany (MMHH-004704) and the A.E. Fersman Mineralogical Museum, Russian Academy of Sciences, Moscow, Russia (4847/1).

**References:** (1) Shchipalkina, N.V., N.V. Chukanov, I.V. Pekov, S.M. Aksenov, C. McCammon, D.I. Belakovskiy, S.N. Britvin, N.N. Koshlyakova, C. Schäfer, R. Scholz, and R.K. Rastsvetaeva (2017) Ferrorhodonite, CaMn<sub>3</sub>Fe[Si<sub>5</sub>O<sub>15</sub>], a new mineral species from Broken Hill, New South Wales, Australia. *Physics and Chemistry of Minerals*, 44(5), 323-334. (2) (2018) *Amer. Mineral.*, 103, 660 (abs. ref. 1). (3) Shchipalkina, N.V., I.V. Pekov, N.V. Chukanov, C. Biagioni, and M. Pasero (2019) Crystal chemistry and nomenclature of rhodonite-group minerals. *Mineral. Mag.* 83(6), 829-835.