

Kremersite

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Crystal Data: Orthorhombic. *Point Group:* $2/m\ 2/m\ 2/m$. Crystals pseudo-octahedral, with balanced {011} and {210}.

Physical Properties: *Cleavage:* Perfect on $\{21\bar{1}\}$ and {011}. *Hardness* = n.d. *D*(meas.) = 2.175 (synthetic). *D*(calc.) = [2.13] Easily soluble in H_2O ; very deliquescent.

Optical Properties: Translucent. *Color:* Ruby-red to red, brownish red; red-brown or yellowish in transmitted light. *Luster:* Vitreous.

Optical Class: [Biaxial (+)] (by analogy to erythrosiderite). *Orientation:* $X = a$; $Y = b$; $Z = c$. $\alpha = [1.733]$ $\beta = [1.763]$ $\gamma = [1.807]$ $2V(\text{meas.}) = [70^\circ]$

Cell Data: *Space Group:* $Pnma$. $a = 13.78$ $b = 9.85$ $c = 7.09$ $Z = 4$

X-ray Powder Pattern: Synthetic $(\text{NH}_4, \text{K})_2\text{FeCl}_5 \cdot \text{H}_2\text{O}$ with $\text{NH}_4:\text{K} \sim 1:1$. 2.800 (100), 5.72 (80), 2.451 (65), 2.794 (60), 5.61 (55), 2.783 (55), 4.900 (40)

Chemistry:

| | (1) | (2) |
|----------------------|----------|--------|
| Na | 0.16 | |
| K | 12.07 | |
| NH_4 | 6.17 | 12.56 |
| Fe | 16.89 | 19.44 |
| Cl | 55.15 | 61.73 |
| H_2O | [9.56] | 6.27 |
| Total | [100.00] | 100.00 |

(1) Vesuvius, Italy. (2) $(\text{NH}_4, \text{K})_2\text{FeCl}_5 \cdot \text{H}_2\text{O}$ with $\text{NH}_4:\text{K} = 1:1$.

Occurrence: As sublimates around fumaroles.

Association: Erythrosiderite, molysite, hematite (Vesuvius, Italy); erythrosiderite (Kliuchevsky volcano, Russia).

Distribution: On Vesuvius, Campania, Italy. From the Kliuchevsky volcano, Kamchatka Peninsula, and at Kopeysk, Chelyabinsk coal basin, Southern Ural Mountains, Russia.

Name: Honors the German chemist, Peter Kremers (1827-?), who analyzed the mineral.

References: (1) Palache, C., H. Berman, and C. Frondel (1951) Dana's system of mineralogy, (7th edition), v. II, 101-103. (2) (1977) NBS Mono. 25, 14, 8. (3) Fleischer, M., R.E. Wilcox, and J.J. Matzko (1984) Microscopic determination of the nonopaque minerals. U.S. Geol. Sur. Bull. 1627, 187.