

Note

ON THE THERMAL DECOMPOSITION OF $K_3[HV_2O_2(O_2)_3F_4] \cdot 2H_2O(K_3[V_2O_2(O_2)_3F_3] \cdot 2H_2O \cdot HF)$

P. SCHWENDT

Department of Inorganic Chemistry, Comenius University, 842 15 Bratislava (Czechoslovakia)

D. GYEPESOVÁ

Institute of Inorganic Chemistry, Centre for Chemical Research, Slovak Academy of Sciences, 842 36 Bratislava (Czechoslovakia)

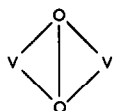
A.E. LAPSHIN, Y.I. SMOLIN and Y.F. SHEPELEV

Institute of Silicate Chemistry, Academy of Sciences USSR, 199 164 Leningrad (U.S.S.R.)

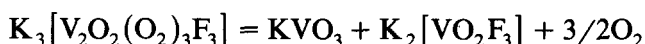
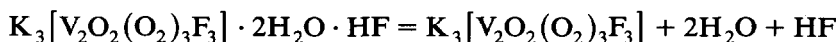
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According to a previous study [1] $K_3[HV_2O_2(O_2)_3F_4] \cdot 2H_2O$ decomposes in two stages. During the first stage water and hydrogen fluoride are released. The decomposition proceeds in the second step by the release of the peroxy oxygen. Results were interpreted without knowledge of the crystal structure.

The crystal structure of $K_3[HV_2O_2(O_2)_3F_4] \cdot 2H_2O$ was recently solved [2] (cell parameters: $a = 0.8518(5)$, $b = 1.2460(5)$, $c = 0.5981(5)$ nm, $\alpha = 92.3(1)$, $\beta = 90.9(1)$, $\gamma = 102.7(1)^\circ$, $Z = 2$, space group P_1). In accordance with the proposed structure [1,3], the anion contains the bridge



with a doubly bidentate peroxy group and the coordination number of the vanadium atom is seven (Fig. 1). But not all fluorine atoms are coordinated to vanadium atoms and the crystal structure contains molecules of hydrogen fluoride. The formula of the complex revealed by the structural analysis is $K_3[V_2O_2(O_2)_3F_3] \cdot 2H_2O \cdot HF$. It is therefore understandable why water and hydrogen fluoride are released almost simultaneously in the first stage of the decomposition. The whole decomposition process is described by the following equations:



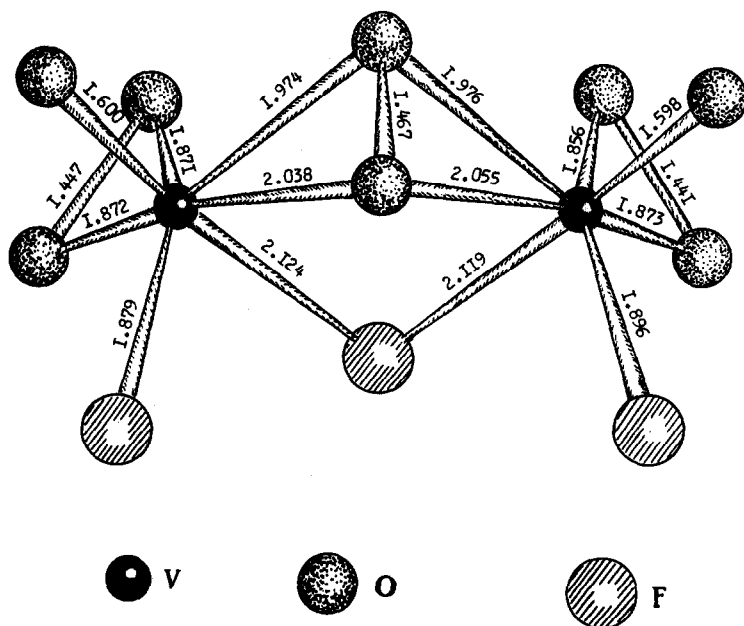


Fig. 1. The structure of the $[\text{V}_2\text{O}_2(\text{O}_2)_3\text{F}_3]^{3-}$ ion.

REFERENCES

- 1 P. Schwendt and D. Joniaková, *Thermochim. Acta*, 68 (1983) 297.
- 2 A.E. Lapshin, Y.F. Shepelev, Y.I. Smolin, D. Gyepesová and P. Schwendt, *Kristallografiya*, in press.
- 3 P. Schwendt and D. Joniaková, *Polyhedron*, 3 (1984) 287.