

THE SYNTHESIS OF SILVER TRIFLUORIDE WITH
DIOXYDIFLUORIDE SOLUTION IN CHLORINE PENTAFLUORIDE

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The study of reactions of liquid dioxydifluoride is complicated by its thermal instability and possibility of explosive interaction with various substances. The use of dioxydifluoride solutions makes it possible to create conditions excluding uncontrolled processes while studying the dioxydifluoride reactions. Chlorine pentafluoride has been used in the given paper as a solvent, which allowed to obtain dioxydifluoride concentrations in solution as compared with HF under the temperatures of 190-273 K. The chlorine pentafluoride with a quantitative yield was obtained by an interaction between dioxydifluoride and chlorine trifluoride at 200-220 K.

The reactions of powder-like silver, AgF and AgF₂ with dioxydifluoride in a liquid chlorine pentafluoride have been considered in the 185-250 K temperature range. The interaction of O₂F₂ with silver has clearly expressed stepped character and it takes place through the formation of AgF, AgF₂ and accompanied by the formation of dioxygenyl derivatives of highest silver fluorides, and their decomposition in the vacuum or under heating leads to a silver trifluoride. It is interesting to note that the AgF₂ reaction with dioxydifluoride in the liquid chlorine pentafluoride takes place at a higher rate (almost by two orders of magnitude) than the AgF₂ interaction with krypton difluoride in a nonaqueous HF. O₂AgF₄ was recovered and characterised.