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FLUORINATION OF ANHYDROUS UO_2F_2 BY GASEOUS MIXTURES OF BROMO-FLUORO-METHANES AND F_2

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Gaseous mixtures of $CBrF_3$ and F_2 have proven their effectivity in the removal of solid UF_6 decomposition products from uranium enrichment installations [1]. In the course of our investigation it was found that anhydrous UO_2F_2, which can be formed under unfavourable conditions, is only slowly attacked by $CBrF_3/F_2$ mixtures with excess F_2.

Therefore, mixtures of the more reactive compounds CBr_2F_2, CBr_3F, and CBr_4 with F_2 were investigated as fluorinating agents for anhydrous UO_2F_2.

In the case of CBr_2F_2, the controlled reaction with F_2 yields $CBrF_3$ and Br_2 which with excess F_2 reacts to give BrF_3. This mixture is a very effective fluorinating agent, and quantitative fluorination of anhydrous UO_2F_2 has been achieved.

The reactivity of CBr_3F- and CBr_4-F_2 mixtures has been investigated. The results are presented and the reaction mechanisms are discussed.

1 W. Bacher, E.W. Becker, W. Bier, E. Jacob, A. Maner, paper to the 8th Europ. Symp. on Fluorine Chemistry, Jerusalem (1983) J. Fluorine Chem., 23 (1983) 465.