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## REACTION OF URANIUM HEXAFLUORIDE WITH FLUROELASTOMERS

W. Bacher, W. Bier and A. Guber\*

Institut für Kernverfahrenstechnik des Kernforschungszentrums Karlsruhe GmbH und der Universität Karlsruhe (T.H.), Postfach 3640, 7500 Karlsruhe (F.R.G.)

Fluroelastomers are used as internal sealing materials in uranium enrichment facilities following the separation nozzle process. For an optimal application of these materials the reaction of uranium hexafluoride with fluroelastomers has been studied.

By infrared spectroscopy of the gas phase it can be shown that traces of hydrogen fluoride present in technical grade  $UF_6$  penetrate into the fluroelastomer material where they react with residues of acid acceptors, usually metal oxides, -hydroxides, and -carbonates, forming water. This water diffuses through the sealing material and subsequently causes a hydrolysis process of  $UF_6$  in the gas phase. Gaseous HF is produced and acts as a fluorine transmitter between  $UF_6$  and the metallic compounds.

These solid products formed by  $UF_6$  hydrolysis are deposited in the vicinity of the fluroelastomers. A spectroscopic analysis of a suspension of the material obtained in dry nitrogen atmosphere identified it as a mixture of uranyl fluoride hydrate and a mixed phase consisting of anhydrous  $UO_2F_2$  and  $UOF_4$ .

The  $UF_6$  reaction observed is avoided by use of a specifically designed fluroelastomer with 3 to 10 wt-% PbO and thus especially suitable for use together with  $UF_6$ .