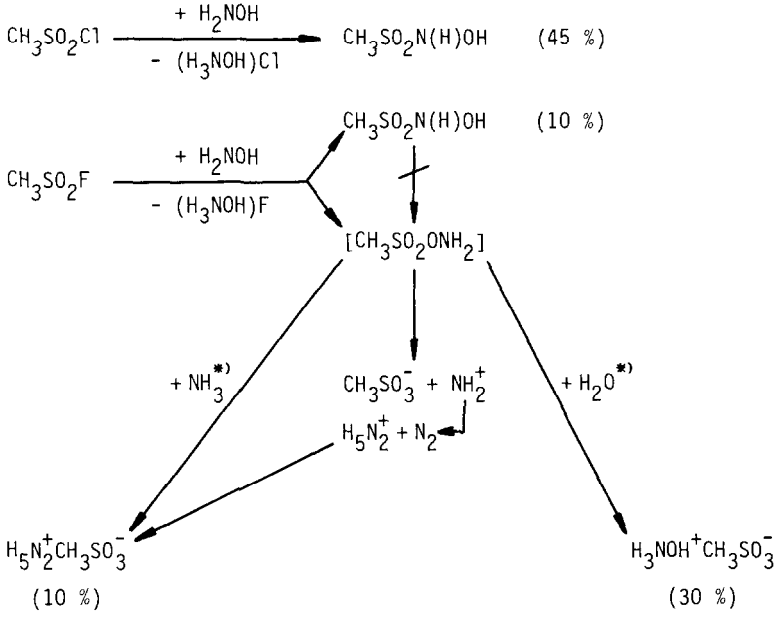
ON THE REACTIONS OF ALKYLSULFONYL AND PERFLUOROALKYLSULFONYL FLUORIDES WITH HYDROXYLAMINES AND HYDRAZINES

B. Bechtloff, M. Boldhaus, K. Brink, M. Bunte, W. Klare, G. Pohlmann, and C. Bliefert

Fachbereich Chemieingenieurwesen der Fachhochschule Münster, Stegerwaldstraße 39, D-4430 Steinfurt 1

Sulfonic acid chlorides react with hydroxylamine to form predominantly N-substituted products [1].

Sulfonic acid fluorides react with hydroxylamine by formation of N-mesylhydroxylamine, hydrazinium(1+) and hydroxylammonium mesylate [2]. R_fSO_2F (R_f = C_4F_9, C_8F_{17}) reacting in the same way as CH_3SO_2F [3], the latter is considered to be a model compound for this kind of reactions.



* Formed by decomposition of hydroxylamine (3 H_2NOH ⟶ NH_3 + N_2 + H_2O).

The formation of the hydrazinium salt is explained by the occurrence of O-mesylhydroxylamine as intermediate. We conclude from the yields that sulfonic acid fluorides react with hydroxylamine to form predominantly O-substituted products.

In order to prepare this O-derivative the reaction between O-(trimethylsilyl)hydroxylamine and mesylfluoride was carried out. Hydrazinium mesylate could be isolated also, which indicates the formation of the instable O-derivative.

The reactions of methylhydrazines and silylated hydrazines with mesylfluoride lead to mesylated products as expected.

1 Cf. K. Brink, W. Gombler and C. Bliefert, Z. Anorg. Allg. Chem., 429 (1977) 255.
2 K. Brink and C. Bliefert, Z. Naturforsch. 35b (1980) 1059.
3 B. Bechtloff and C. Bliefert, unpublished results.