

## Preliminary Note

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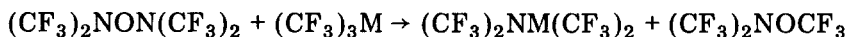
### Reactions of perfluoro-(2,4-dimethyl-3-oxa-2,4-diazapentane) with tris(trifluoromethyl)-phosphine, -arsine and -stibine

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Perfluoro-(2,4-dimethyl-3-oxa-2,4-diazapentane) (I), which has been reported recently, is known to undergo reactions involving the cleavage of the N-O bond [1 - 4]. Hitherto, no report has been recorded of its reactions with inorganic compounds. We have now examined the reactions between compound (I) and  $(CF_3)_3M$  ( $M = P, As$  and  $Sb$ ). With equimolar quantities of reactants, tris(trifluoromethyl)phosphine yields  $(CF_3)_2NP(CF_3)_2$ ,  $(CF_3)_2NOCF_3$  being eliminated. Tris(trifluoromethyl)arsine undergoes similar reactions to afford  $(CF_3)_2NAs(CF_3)_2$  and  $(CF_3)_2NOCF_3$ . These reactions can be represented by the equation,



where  $M = P$  or  $As$ .

The above reaction involves ready cleavage across the N-O bond. All the products are known and are readily characterized by their infrared spectra and molecular weights. The phosphine and arsine derivatives may be confirmed by their reactions with 20% sodium hydroxide, which leads to the evolution of  $CF_3H$ .

The reaction between  $(CF_3)_2NON(CF_3)_2$  and  $(CF_3)_3Sb$  proceeds differently, the main products isolated being  $(CF_3)_2NOCF_3$ ,  $CF_3N=CF_2$  and  $SbF_3$ .

The above reactions of  $(CF_3)_2NON(CF_3)_2$  bear a striking resemblance to those of  $(CF_3)_2NX$  ( $X = Cl, Br$ ) with  $(CF_3)_3M$  ( $M = P, As$  and  $Sb$ ) [5, 6]. These reactions not only reflect the weakness of the N-O bond but also the similarity in properties of the  $(CF_3)_2NO$  radical to the halogens. It is not unreasonable to suggest that in the above reactions unstable quinquivalent in-

termediates such as  $(CF_3)_3M \begin{matrix} \diagup ON(CF_3)_2 \\ \diagdown N(CF_3)_2 \end{matrix}$  are formed.

*References*

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