FOREWARD

The work embodied in the present thesis was undertaken initially to synthesise and study the organotin derivatives of nitroso-napthols and related ligands which, a survey of the literature showed, received very little attention compared to other ligands, e.g., 8-hydroxy quinoline and its derivatives, hydroxamic acids, acetylacetone etc. It was, however, soon realised that reaction of 1-nitroso 2-napthol or 2-nitroso-1-napthol with organotin compounds never yielded the desired R_3SnCh type compounds (Ch = 1-nitroso-2-napthol or 2-nitroso-1- napthol), instead functionally substituted stannoxanes of varying complexities were invariably produced irrespective of whether the reaction was carried according to eqn(1) or (2), the two most frequently adopted procedures for synthesising such derivatives.

$$R_3Sn\,X + K(Na)\,Ch \longrightarrow \text{Products.} \qquad (1)$$

$$R_3SnOSnR_3 + 2HCh \longrightarrow \text{Products.} \qquad (2)$$

It was therefore decided to investigate the reactions between organotin compounds and nitroso napthols and related compounds in order to understand the anomalous behaviour of the nitroso - napthols. However, the complexcities of the products, their polymeric nature and extremely low solubility, in most cases, in common solvents made the separation, purification and thorough identification of all the products extremely difficult. As such, structures of the products have to be inferred primarily from the analysis of IR and electronic

absorption data together with elemental analysis.

The thesis is divided into four chapters. A brief survey of the organotin chemistry is presented in chapter I.

Since extensive tin-carbon bond cleavage is one of the notable features of the reactions of nitroso-napthols with organotin compounds, a short review of the tin-carbon bond cleavage reactions has been presented in chapter II.

The reactions of 1-nitroso-2-napthol and its k-salt with organotin halides and stannoxanes have been discussed in chapter III. In order to high-light the effect of structural features on these reactions, the reactions of a number of structurally related molecules, e.g., diacetyl monooxime, α-benzil mono-oxime and benzoin mono-oxime have also been studied and included in this chapter. IR and electronic spectral data of the products have been discussed and tentative structures have been proposed in a number of cases. Probable mechanism for the formation of the different products have been suggested.

In the last chapter preparation of some organotin carboxylates by the reaction of esters with organotin hydroxides has been presented. This work was undertaken with a view to synthesising mono (triorgano tin) esters of dicarboxylic acids, e.g., oxalic acid, malonic acid etc., which could not be satisfactorily prepared by the usual methods.