Burgess reagent first prepared by E. M. Burgess in 1968, is a mild and selective dehydrating agent for secondary and tertiary alcohols and due to the amphipolar nature it is gainfully employed in a number of creative synthetic ventures. A close examination of the structure of Burgess reagent reveals that it can act as a 1,2-dipole. To the best of our knowledge, no attempts have been made to tap full synthetic potential of the amphipolar nature of this reagent and no reports on 1,3-dipolar addition to a σ-bond in acyclic systems are available in literature. In this context, we propose to unravel novel applications of Burgess reagent based on its amphipolar nature.

Rich and multifaceted chemistry of nitrones form the basis of many successful chemical transformations used in attractive synthetic strategies. For the last 50 years special attention has been given to nitrones due to their successful application as building blocks in the synthesis of various natural and biologically active compounds. Our interest in nitrones stems out of its unique character: *i.e.* it is a 1,3-dipole exhibiting distinct nucleophilic activity.

We reasoned that 1,3-dipole possessing significant nucleophilicity should react with amphipolar Burgess reagent with elimination of triethylamine to give the corresponding five-membered ring product by formal dipolar addition to a σ bond. To test this hypothesis we studied the reaction of nitrones with Burgess reagent. This thesis reveals our attempts to explore the [3+2] annihilation reaction of nitrones with Burgess reagent which was found to be followed by a rearrangement
involving C-to-N aryl migration, ultimately resulting in diarylamines and carbamates.

We have also examined the reaction of cyanuric chloride with nitrones in DMF with a view to exploit the nucleophilicity of nitrones and to unravel the migratory aptitude, if any, observed in this reaction.

The thesis is divided into six chapters. **Chapter 1** gives a brief introduction to Burgess reagent, nitrones and [3+2] annulation reactions with useful applications. Research problem is defined at the end of this chapter. **Chapter 2** deals with the synthesis of nitrones. Reactions of various nitrones with Burgess reagent are presented in **Chapter 3**. In **Chapter 4**, reaction of Burgess reagent with a few selected \(\alpha,\alpha,\alpha\)-triarylnitrones with different substituents on the \(\alpha\)-aryl ring to establish the actual mechanism of migration is described. Study of the reactions of various nitrones with cyanuric chloride given in **Chapter 5** provides additional evidence for the nucleophilic character of nitrones. Potential application of the new C-to-N aryl migration reaction discovered by us is described in **Chapter 6**. In this chapter we present an attractive route for the synthesis of a variety of diarylamines. The novel procedure developed by us is especially suited for the generation of unsymmetrically substituted diarylamines for which there is increasing demand due to their applications.

The structural formulae, schemes, tables and figures are numbered chapter-wise as each chapter of the thesis is organised as an independent unit. All new compounds are fully characterised on the basis of their spectral and analytical data. A comprehensive list of references is given at the end of each chapter.