

## PREFACE

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*N*-Nitroso compounds are present in a wide range of foods, cosmetics and natural products. *N*-Nitrosamines are being widely used in synthetic organic chemistry as valuable starting material & intermediates. These compounds have been used in various treatments including cancer, cardiovascular diseases, central nervous disorders, etc. *N*-Nitrosamines undergo oxidation, reduction, rearrangement, cyclization, denitrosation, photochemical reactions, etc.

In this context, the thesis entitled “**Synthesis and Applications of *N*-Nitroso Compounds in the Preparation of Benzotriazoles, Benzimidazoles, Azides and Amides**” describes the synthesis and applications of *N*-nitrosamines and *N*-nitrosamides.

**Chapter 1** provides a brief introduction to *N*-nitroso compounds. Biological and synthetic applications of *N*-nitrosamines and *N*-nitrosamide compounds have been discussed concisely in this chapter. **Chapter 2** includes potassium persulfate-promoted effective *N*-nitrosation of secondary and tertiary amines with nitromethane under mild conditions. *N*-nitrosation has been achieved at 60 °C in the presence of base DBU. **Chapter 3** focuses on the development of mild and practical methods for the (i) transformation of *o*-phenylenediamines into benzotriazoles and (ii) conversion of sulfonyl and acyl hydrazines into corresponding sulfonyl and acyl azides in the presence of *tert*-butyl nitrite. **Chapter 4** emphasizes on generating a new method for the transformation of *o*-phenylenediamine into benzimidazole in the presence of aldehydes *via* *N*-nitrosamine intermediate. **Chapter 5** presents an efficient and sustainable method for transamidation of secondary amides *via* *N*-nitrosamine intermediate under metal and catalyst free conditions. Finally, **Chapter 6** comprises of the summary and conclusion the whole thesis work.