

Preface

Nitrogen is a naturally occurring element that is essential for the growth and development of both plants and animals. It is found in proteins, nucleic acids and in several other organic and inorganic compounds. A vast number of nitrogen-containing heterocyclic compounds have found applications in pharmaceutical research, agriculture science and drug discovery. Nitrogen is a part of several functional groups such as amines, imines, amides, oximes etc. and biologically relevant heterocyclic compounds like pyrrole, pyridine, pyrimidine, indole, benzimidazole, and benzoxazoles. In this context, the thesis entitled “**Green Approaches for the Synthesis of Some Biologically Relevant Nitrogen-Containing Organic Compounds**” will introduce various aspects of the synthesis of nitrogen-containing organic compounds.

Chapter 1 will provide a general introduction and literature review of the synthesis and applications of some main class of nitrogen-containing organic compounds. Chapter 2 will describe transamidation of secondary carboxamides and the amidation of esters facilitated by magnetic Co@NC nanoparticles, under neat conditions. Chapter 3 will describe microwave-assisted Chemoselective transamidation of secondary amides by selective N-C(O) bond cleavage under catalyst, additive and solvent-free conditions. Chapter 4 will highlight A green approach for the synthesis of 2-Oxo-1,2,3,4-tetrahydropyrimidines through oxidative functionalization of methyl arenes/benzyl derivatives via *in situ* generated urea. Chapter 5 will describe montmorillonite K-10 catalyzed synthesis of Hantzsch dihydropyridine derivatives from methyl arenes via *in situ* generated ammonia under microwave irradiation in neat conditions.