INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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SHORT ABSTRACT

Nitrosoarene is a versatile reagent for incorporation of N, O-functionality. However, the use of arene moiety in the reaction is not widely explored. Development of new protocols where the involvement of -N=O group as well as the arene moiety of nitrosoarene are applied towards the syntheses of valuable bio-active scaffolds is highly desirable. The contents of this thesis entitled "**Syntheses of *N*-heterocycles *via* arene functionalization of nitrosoarenes**" have been divided into six chapters. A brief review on different reactivity of nitrosoarene has been presented in the first chapter. Chapter 2 describes metal-free sequential C(sp^2)−H and C(sp^3)−H aminations of nitrosoarenes and N-heterocycles to ring-fused imidazoles. Chapter 3 presents N-aminations of benzylamines and alicyclic amines with nitrosoarenes to hydrazones and hydrazides. Chapter 4 describes Lewis-acid catalyzed pseudo three-component annulation of nitrosoarenes and (epoxy)styrenes to provide arylquinolines. Chapter 5 describes nitroso- ene reaction of nitrosoarene and azomethine to nitrones. The strategy has been applied for one-pot three component synthesis of oxazolidines and aryl quinolines. Finally, the experimental details and copies of ^{1}H and ^{13}C NMR data have been provided in chapter six.