INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

Name of the Student : Satavisha Sarkar
Roll Number : 10612235
Programme of Study : Ph.D.

Thesis Title: Synthesis of Nitrogen Containing Heterocycles & Anthranilate Esters Utilizing Multicomponent Reaction (MCR) Strategy

Name of Thesis Supervisor(s) : Prof. Abu T. Khan
Thesis Submitted to the Department/ Center : Chemistry

Date of completion of Thesis Viva-Voce Exam : 5.10.2016
Key words for description of Thesis Work : Multicomponent Reactions; Nitrogen containing Heterocycles; Anthranilate Esters; Chemoselectivity

SHORT ABSTRACT

The contents of this thesis entitled “Synthesis of Nitrogen Containing Heterocycles & Anthranilate Esters Utilizing Multicomponent Reaction (MCR) Strategy” have been divided into five chapters based on the results of experimental works performed during the complete course of the research period.

The first chapter of the thesis represents an outline on different aspects of multicomponent reactions, its application as a useful tool for the synthesis of various organic scaffolds. This chapter mainly emphasizes on the synthesis of different nitrogen containing heterocycles via C–C, C–N or C–O bond formations (C-S and other C-X). Different strategies have been developed and applied to build a wide array of organic moieties.

Chapter two illustrates BDMS-catalyzed synthesis of seven membered 1,5-Benzodiazepine derivatives from aromatic aldehydes, β-ketoesters and o-phynelene diamine. The next chapter describes one pot, pseudo-five component synthesis of highly functionalized [1,6]- napthyridines from methyl ketones, malonitrile and thiophenols or aliphatic alcohols. The thirdchapter demonstrates the use of DMAP as an efficient catalyst for the synthesis of fully substituted pyridine and 1,4-dihydropyridine derivatives using aromatic aldehydes, malonitrile and primary aliphatic amines in a highly chemoselective manner. The last chapter illustrates the synthesis of symmetrical and unsymmetrical anthranilate esters from o-nitrobenzaldehyde via simultaneous installation of ester and amide functionality via a C–O and C–N bond formation following an intramolecular redox process. Each of these chapters include introduction, previous works, present work, experimental section, references, spectral data and some selected spectra.