



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI  
SHORT ABSTRACT OF THESIS

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Programme of Study : Ph.D.  
Thesis Title : **Synthesis of Fused *N*-Heterocycles via Tandem Alkenyl/Alkynyl Cyclization Reactions**  
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SHORT ABSTRACT

The contents embodied in this thesis are divided into six chapters, including an introductory chapter, based on experimental results obtained during the research period.

The introduction **Chapter 1** provides a concise overview of *N*-heterocycles, tandem reactions, with a primary focus on tandem alkenyl/alkynyl cyclization reactions towards the construction of fused *N*-heterocyclic compounds. **Chapter 2** describes the synthesis of dihydro[1,2,3]triazolo-pyrimidoisoindolone and dihydro[1,2,3]triazolo-diazepinoisoindolone scaffolds via *N*-acyliminium ion and the Huisgen reaction. **Chapter 3** highlights a Lewis acid catalyzed cascade route to iminoisoindoloindolone and its derivatives from 2-alkynylanilines and 2-formylbenzonnitriles. **Chapter 4** showcases the advancement in the synthesis of pseudoindoxyl scaffolds utilizing mild base  $K_2CO_3$  and assisted by indole. **Chapter 5** discusses the substrate-dependent cascade annulation of 2-alkynylcyclopropanes with 2-azidobenzonnitriles and 2-azidobenzaldehydes for the efficient construction of 1,6-naphthyridine and isochromeno[4,3-*c*]quinoline frameworks. **Chapter 6** serves as the concluding chapter, integrating the key findings from all the previous chapters and highlighting the overall contributions of this research. Each of these chapters comprises several subsections, which include an introduction, previous work, present work, results and discussion, conclusions, experimental section, references, characterization data, and a few representative spectra.