INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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SHORT ABSTRACT

The contents embodied in this thesis is divided into five chapters including one introductory chapter based on experimental results obtained during the research period. The introductory chapter represents an overview of the utility of sulfoximines and *o*-alkynylanilines towards the construction of C–C and C–heteroatom bonds. This includes a brief discussion about all the possible reactive sites present in sulfoximines and their possibility of forming different functionalized molecular complexities. Similarly, the reactivity of *o*-alkynylanilines for the formation of diverse heterocyclic scaffolds has been discussed.

Chapter II demonstrates a visible-light-induced decarboxylative strategy between cinnamic acids and NH-sulfoximines for the synthesis of α-keto-*N*-acylsulfoximines. Chapter III describes a visible-light-induced PIDA-I_2-mediated synthesis of *N*-acylsulfoximines from NH-sulfoximines and methylarenes. Chapter IV describes an Et_3N-promoted synthesis of 1,4-diarylisothiazolones from α-keto-*N*-acylsulfoximines. Chapter V describes a route for the synthesis of tricyanovinylindoles from *o*-alkynylanilines utilizing DMSO as a carbon synthon and NH_4SCN as the cyano source. Further, selective hydrolysis of the synthesized tricyanovinylindoles leads to the formation of indolylmaleimides.

Each of these chapters comprises seven subsections which include an introduction, previous work, present work, experimental section, references, spectral data, and a few representative spectra.