
Preface

The fundamental goal of this thesis is to create novel synthetic methodologies that use visible light as a renewable, sustainable, and environmentally friendly source of energy. Light irradiation provides enough energy to perform the reaction without the disadvantages of thermal activation, such as high temperatures or harsh conditions. This thesis work focuses on developing novel visible-light-mediated organic transformation strategies for the synthesis of Nitrogen and Sulfur-containing compounds in distinct ways.

The effective green synthesis of nitrogen and sulfur-containing compounds is embodied in the thesis titled "**Visible Light Mediated Synthesis of Nitrogen and Sulfur-Containing Compounds: A Greener Approach**". **Chapter 1** will provide a detailed explanation of visible light, its importance, and visible light-mediated synthesis of nitrogen and sulfur-containing compounds.

Chapter 2 will describe the visible-light-induced Cu-catalyzed synthesis of Schiff's base of 2-amino benzonitrile derivatives and acetophenones. **Chapter 3** will disclose the photo-triggered catalyst-free synthesis of sulfonamides in a sustainable solvent via an electron donor-acceptor (EDA) complex. **Chapter 4** will highlight visible-light-induced arylation via electron-donor-acceptor complex: a catalyst-free approach for the synthesis of n-(hetero)aryl sulfonamides. **Chapter 5** will present a visible-light-driven synthesis of amine-sulfonate salt derivatives: a step towards a green approach finally, **Chapter 6** will summarize and conclude the total thesis work.