

## Application of Visible Light Organic Photoredox Catalysts in C–H Functionalizations and Oxidation of Alcohols

Our main focus was to develop photocatalytic methods using visible light organic photocatalysts for organic syntheses. Keeping this idea in mind, we have developed a metallaphotoredox method by combining organic photocatalyst and palladium catalyst for the construction of C–O bonds via C–H functionalizations. In addition, we have showed visible light induced aerobic oxidation of alcohols using organic photocatalyst and pseudohalide (thiocyanate anion). Finally, we have explored photocatalytic method using organic photocatalyst for the synthesis of amides via the polarity induced oxidation of alcohols.

The thesis entitled as "*Application of Visible Light Organic Photoredox Catalysts in C–H Functionalizations and Oxidation of Alcohols*" contains five chapters. **Chapter 1** describes the mechanism of visible light photoredox catalysis and their application in C–C and C–X bond formations. **Chapter 2** reports the metallaphotoredox mediated C(sp<sup>2</sup>)–H hydroxylation of arenes under aerobic condition. **Chapter 3** deals with the direct oxygenation of C–H bonds through photoredox and palladium catalysis. **Chapter 4** illustrates the pseudohalide assisted aerobic oxidation of alcohols in the presence of visible light. **Chapter 5** demonstrates the photocatalytic synthesis of amides via aerobic oxidation of alcohols.

