

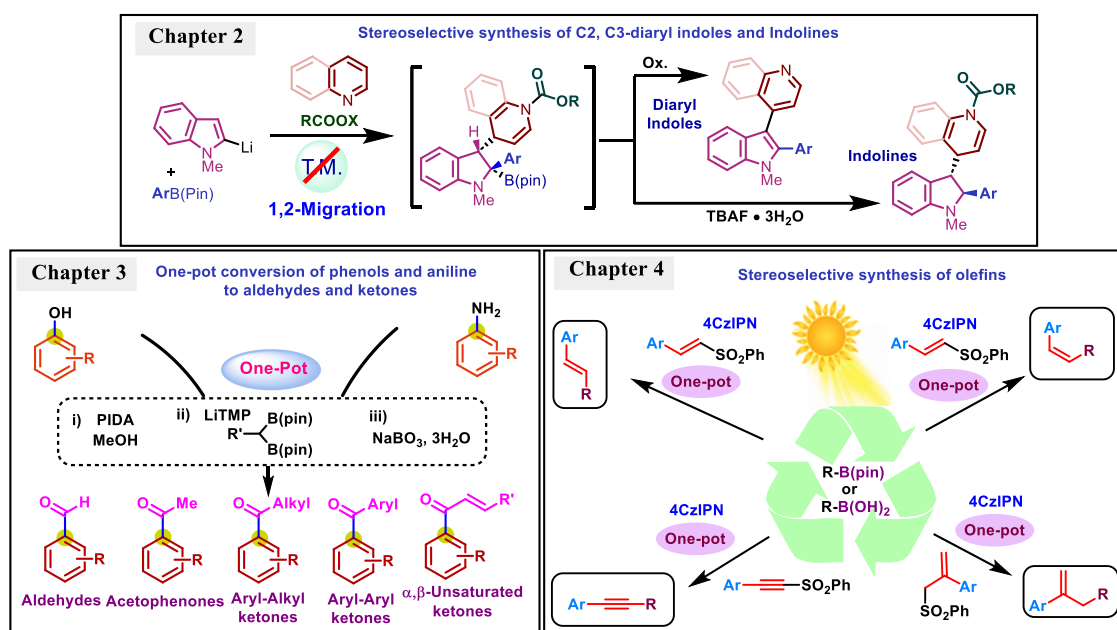
The thesis entitled “Exploiting Organoborons for 1,2-metallate Rearrangement, Boron-Wittig and Photoredox Catalysis” has been divided into four chapters.

**Chapter 1** describes the overview of organoboron compounds and their key properties such as 1,2-metallate rearrangement, Boron-Wittig reaction, and the use of organoboron compounds towards photoredox catalysis.

**Chapter 2** presents a novel approach for the transition metal-free synthesis of C2, C3-diaryl indoles, indolines via multicomponent coupling protocol using 1,2-boronate rearrangement as a key step.

**Chapter 3** describes a one-pot, transition metal-free pioneering strategy for the synthesis of a diverse range of aldehydes and ketones, starting from phenols and protected anilines via C-O and C-N bond cleavage using the boron-Wittig reaction as the key step.

**Chapter 4** talks about the development of a novel methodology for visible light-mediated stereoselective vinylation starting from boronic acid and esters using 4CzIPN as an organophotocatalyst.



**Keywords:** Multicomponent reaction, 1,2-boronate rearrangement, Functional group interconversion, Boron-Wittig reaction, Stereoselective vinylation, organophotocatalysts.