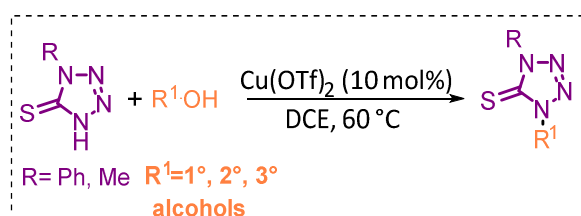
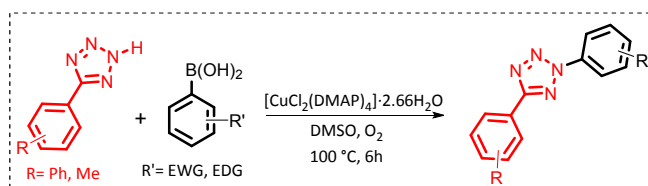


6.1 General Conclusion

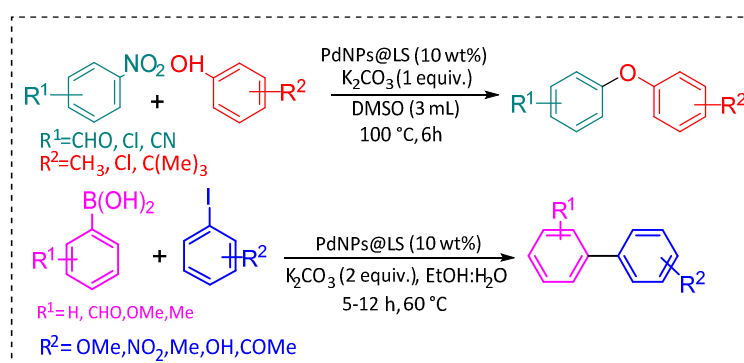
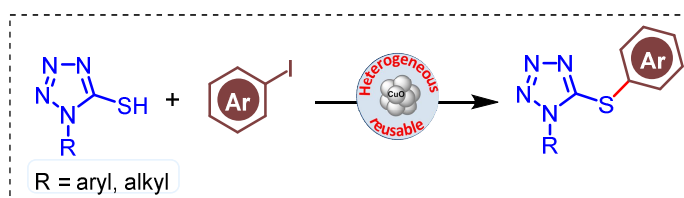
This thesis mainly focuses on the functionalization of Tetrazole and its derivatives using copper as catalyst source, followed by bio-based supported palladium nanoparticles as catalyst for C-C and C-O cross-coupling reactions. It comprises of five experimental works (chapters 2-5), chapter 5 contains two experimental works and six chapters in total. The schematic representation of the experimental works is shown in Figure 6.1.

Chapter 2: Direct C-N coupling of tetrazole and phenylboronic acid in presence of a 10 mol% copper complex catalyst system for the synthesis of regioselective 2,5-disubstituted tetrazoles.



Chapter 3: A protocol for the chemoselective formation of C-N bond using Cu(OTf)₂ as catalyst has been developed using heterocyclic thiones. The reaction occurs at the nitrogen centre over the sulphur leading to C-N bond formation

Chapter 4: S-arylation of tetrazole-5-thiones with arylhalides using copper oxide nanoparticles (CuO NPs) has been reported.



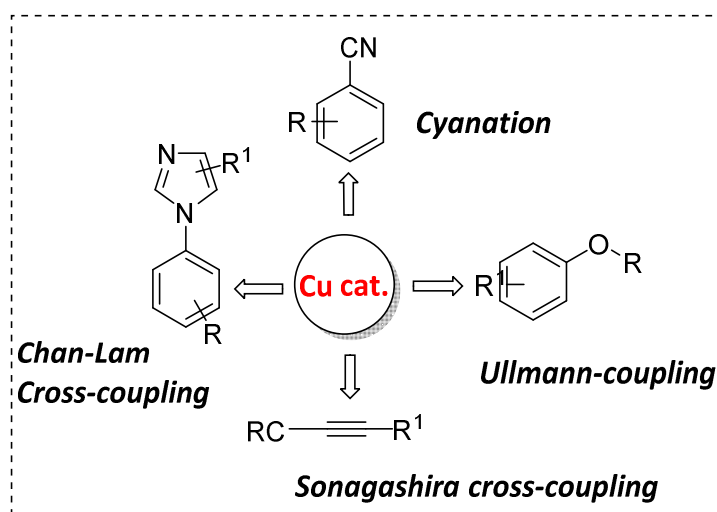
Chapter 5: This work reports a practical approach for C-O and C-C bond formation reactions catalysed by Palladium NPs supported on Luffa sponge (PdNPs@LS)

Figure 6.1 Table of contents of experimental works

6.2. Future Scopes

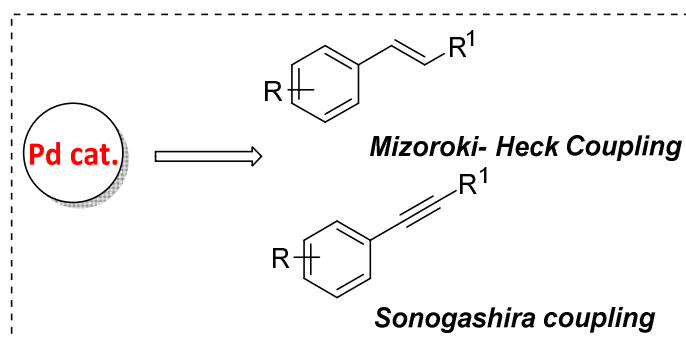
The current works described in this thesis have the potential to be extended to other useful transformations. Accordingly, the possible future scope of the work is described below:

Cu-complex can be further explored to other copper mediated organic transformations such as Cyanation reaction, Ullmann Coupling, Sonagashira cross-coupling and other Chan-Lam cross-coupling reactions as depicted in Scheme 6.1.



Scheme 6.1 Copper catalysed organic transformations

Similarly, already prepared bio-based derived Palladium catalyst can further be used for other cross-coupling reactions as well such as Mizoroki-Heck and Sonagashira cross-coupling reactions as depicted in Scheme 6.2.



Scheme 6.2 Palladium catalysed cross-coupling reactions