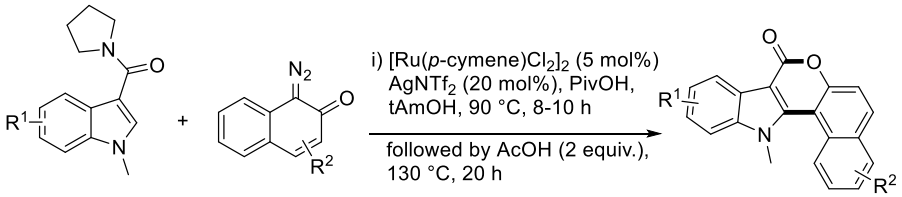
Transition Metal Catalyzed Site-Selective C-H, N-H Arylation and Cyanation of Indoles and Azoles Using Diazoquinone and NCTS

Keywords: (1) C-H arylation (2) N-H arylation (3) quinoid-carbene (4) Cyanation (5) Indoles (6) Azoles

The thesis entitled "**Transition Metal Catalyzed Site-Selective C-H, N-H Arylation and Cyanation of Indoles and Azoles Using Diazoquinone and NCTS**" describes the strategies for C-H functionalization for indoles and N^2 arylation for benzotriazoles and indazoles.

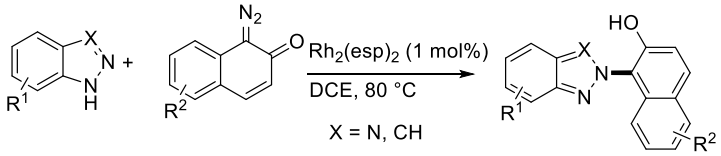
Chapter 1 offers an introductory overview on arylation strategies based on insertion of quinoid carbene and transtion metal catalyzed C-H cyanation strategies using NCTS.

Chapter 2 describes Ru(II) catalyzed synthesis of azacoumestans via migratory insertion of quinoid carbene (scheme 1).



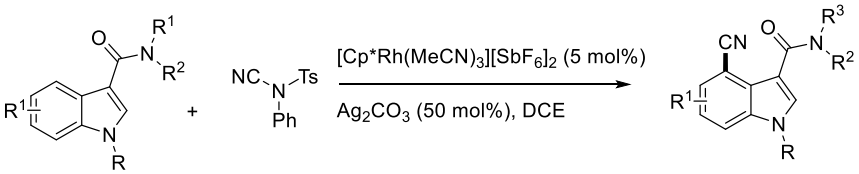
Scheme 1: Ru(II) catalyzed synthesis of azacoumestans

Chapter 3 illustrates Rh(II)-catalyzed N^2-Selective arylation of benzotriazoles and indazoles using quinoid carbenes (scheme 2).



Scheme 2: Rh(II)-catalyzed N^2-Selective arylation of benzotriazoles and indazoles

Chapter 4 describes weakly coordinating *tert*-amide assisted Rh(III)-catalyzed C4-cyanation of indoles using bench stable cyanating agent NCTS (scheme 3).



Scheme 3: Rh(III)-catalyzed C4-cyanation of indoles using NCTS