

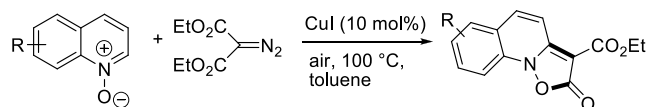
Transition Metal Catalyzed Direct Site-Selective Functionalizations and Annulations of Aza-Heterocycles for the Construction of Extended Conjugated Systems.

Keywords: (1) C–H functionalization (2) Transition metal catalysis (3) Annulation (4) Step-economic synthesis (5) Conjugate π -system

The thesis entitled “**Transition Metal Catalysed Direct Site-Selective Functionalizations and Annulations of Aza-Heterocycles for the Construction of Extended Conjugated Systems**” describes the strategies for the construction nitrogen-containing polyaromatic hydrocarbons (*N*-PAHs) starting from simple aza heterocycles following step-economic pathways.

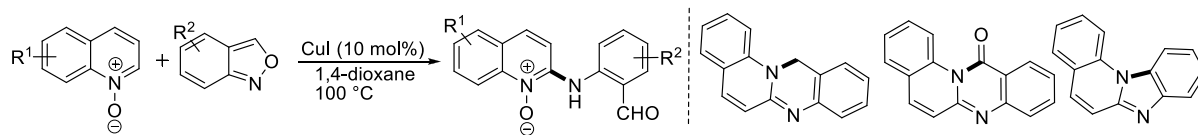
Chapter 1 offers an introductory overview on C–H bond functionalizations/annulations strategies as an emerging alternative to conventional protocols for the construction of conjugated π -systems.

Chapter 2 illustrates CuI-catalyzed regioselective cascade alkylation and cyclo-condensation of quinoline *N*-oxides with diazo esters (Scheme 1).



Scheme 1: CuI catalyzed π -extension of quinolines *N*-oxides using diazo compounds

Chapter 3 describes CuI-catalyzed direct, C2-selective arylation of *N*-oxides using anthranil as coupling partner and its extension in studies of the products for the construction of conjugated π -Systems (Scheme 2).



Scheme 2: CuI catalyzed C2-arylation of *N*-oxides

Chapter 4 describes Rh(III)-catalyzed straightforward, step-efficient synthesis of benzophenanthroline and benzophenanthroline derivatives using anthranils (Scheme 3).

