



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Thesis Title: **SITE-SELECTIVE C-H FUNCTIONALIZATION OF INDOLES: STUDIES TOWARDS C-C AND C-N BOND FORMATION**

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SHORT ABSTRACT

The thesis is structured into four chapters. The first chapter describes a Ru-catalyzed regioselective C-N bond formation of indolines and carbazole with acyl azides via C7(sp²)-H activation followed by an intramolecular C-N bond formation for the construction of 7-aminoindoline and 1-aminocarbazole scaffolds. The second chapter deals with Cu-catalyzed C7-selective C-H/N-H cross-dehydrogenative coupling of indolines and azaindoles with sulfoximines. The third chapter demonstrates a Rh-catalyzed site-selective C7 and C6 dual C-H functionalization of indolines expending 7-azabenzonorbornaiene for the formation of functionalized pyrrolocarbazoles. The fourth chapter focuses on Pd-catalyzed weak-coordination facilitated C4- selective redox-neutral nitration of indoles with *tert*-butyl nitrite under aerobic oxidation catalysis.