



INDIAN INSTITUTE OF TECHNOLOGY GUWAHATI
SHORT ABSTRACT OF THESIS

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Programme of Study : Ph.D.

Thesis Title: Transition-Metal-Catalyzed C-C and C-Heteroatom Bonds Formation using Strained Rings: Enroute to Spiro and Heterocyclic Congeners

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SHORT ABSTRACT

The thesis is segmented into four chapters. The first chapter emphasizes the significance of spiro and heterocyclic scaffolds and the transition-metal-catalyzed reactivity of strained rings, leading to cyclic congeners. The second chapter explores Pd-catalyzed [3+2]-annulative C-C coupling of spirovinylcyclopropyl oxindoles with *p*-quinone methides for diastereoselective synthesis of spiro-oxindole cycloadducts and cytotoxicity of the spiro-derivatives against cancer cells. The third chapter discusses Fe-catalyzed efficient synthesis of biorelevant fused morpholines *via* C-N/C-O coupling between aziridines and 2,4-dienals. The fourth chapter addresses Rh-catalyzed C-H/C-C activation/annulation of quinoline *N*-oxides with cyclopropanones to produce functionalized 2-quinolone derivatives.