Gold(I) and Gold(III) catalyzed cycloaddition/cyclization reactions of vinylindoles with allenes

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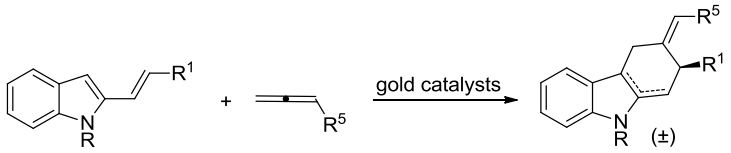
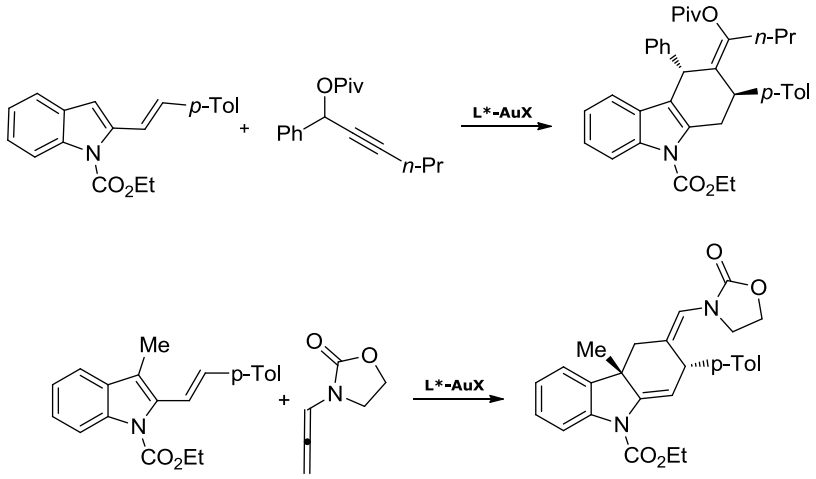
In the last year we developed several strategies to access carbazole derivatives through [4+2] cycloaddition reactions of 2-vinylindoles with allenes under gold catalysis. Application of cationic gold(I) and gold(III) catalysts as π-activators allowed for the chemo-, regio- and diastereoselective construction of complex and intriguing architectures, Scheme 1.[1,2]



Scheme 1

More recently we are focusing on the enantioselective version of these and related reactions. In particular, we are currently studying the enantioselective version of our cascade reaction between 2-vinylindoles and propargyl esters and between a new class of 2-vinylindoles bearing a methyl group at C-3 position with allenamides for the synthesis, respectively, of enantioenriched tetrahydrocarbazoles and dearomatized indole derivatives, Scheme 2.



Scheme 2

A complete survey of catalyst/ligand screening as well as scope and proposed reaction mechanisms will be reported.

Bibliografia

[1] Pirovano, V.; Decataldo, L.; Rossi, E.; Vicente, R., *Chem. Commun.*, **2013**, *49*, 3594. [2] Pirovano, V.; Arpini, E.; Dell'Acqua, M.; Vicente, R.; Abbiati, G.; Rossi, E., *Adv. Synth. Catal.*, **2016**, *358*, 403.