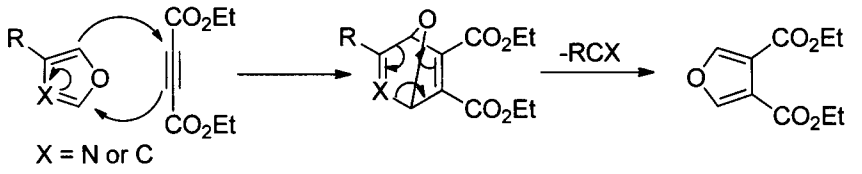
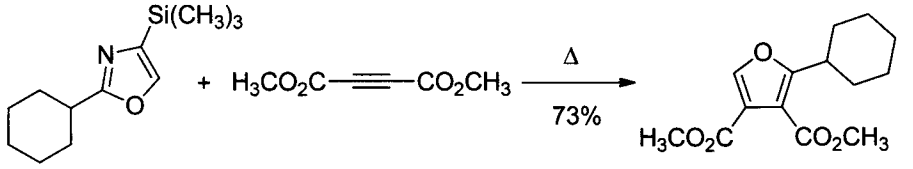


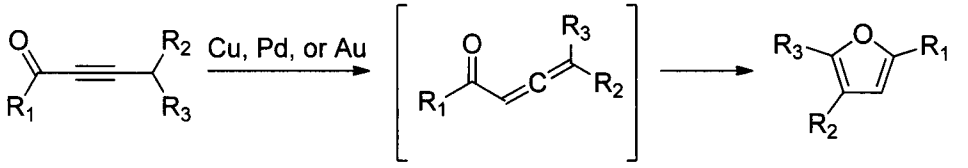
Aoyama and co-workers used this approach in their synthesis of 2,3,4-trisubstituted furan derivatives.[47] Reaction of 2-cyclohexyl-4-(trimethylsilyl)oxazole with dimethyl acetylenedicarboxylate under thermal conditions gave the corresponding derivative in good yield.



Transition Metal-Promoted Cyclization Reactions

A powerful method for generating furans is via transition metal-catalyzed isomerization reactions of unsaturated acyclic precursor including allenyl and propargyl ketones. In recent years, propargyl ketones have largely replaced the use of allenes in these reactions because they are much more stable than their allene counterparts.

Cylcoisomerization of propargyl ketones is often assisted by transition metals such as gold, palladium and copper, and the reaction is believed to proceed through an intermediary allene. Di- and trisubstituted furans have been prepared in good yields via this method.



Kel'in and Gevorgyan illustrated the utility of this process with the copper(I)-catalyzed cyclization of a series of propargyl ketones to form the corresponding 2,5-disubstituted furans.[48] Treatment of 8-methylnon-7-en-5-yn-4-one with copper(I) iodide under basic conditions provided the corresponding furan in 88% yield.