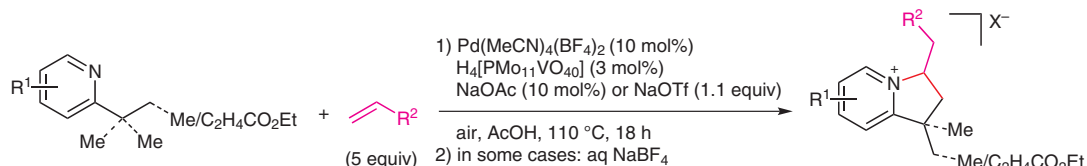


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Aerobic Pd-Catalyzed sp^3 C–H Olefination: A Route to Both N-Heterocyclic Scaffolds and Alkenes

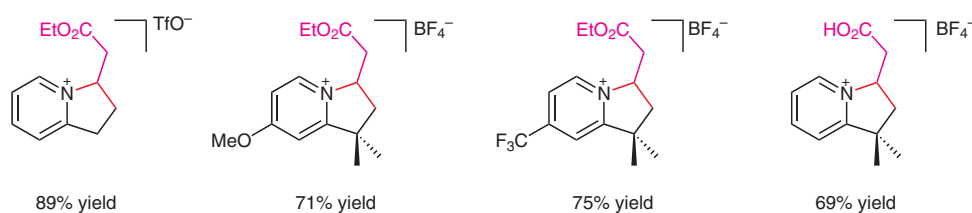
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Pd-Catalyzed Pyridine-Directed Aerobic Olefination of Unactivated sp^3 C–H Sites



$\text{R}^1 = \text{Ph, Me, OMe, CF}_3$
 $\text{R}^2 = \text{CO}_2\text{Et, CO}_2\text{Bu, CO}_2\text{Bn, CO}_2\text{H, CONMe}_2, \text{COEt}$
 $\text{X} = \text{OAc, OTf, BF}_4$

Selected examples:



Significance: A new palladium/polyoxometalate-catalyzed aerobic olefination of unactivated sp^3 C–H bonds has been developed. Nitrogen-containing heterocycles act as directing groups and the products undergo reversible intramolecular Michael addition to form bicyclic nitrogen-containing scaffolds.

Comment: The cationic bicyclic products undergo further synthetic transformations. For example, PtO_2 -catalyzed hydrogenation yields piperidines, and reduction with NaBH_4 gives 1,2,3,6-tetrahydropyridines. The pyridinium products can also be converted into the corresponding alkenes under basic conditions.

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