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METAL INDUCED REACTIONS OF AZIRINES

by

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ABSTRACT

Novel metal complexed induced reactions of azirines provide simple and convenient synthetic approaches to heterocyclic systems. Palladium (0) catalyzed carbonylation reactions of azirines under homogeneous and heterogeneous reaction conditions, as well as molybdenum hexacarbonyl induced reactions of azirines in the presence of carbanions are described. Various reagents and conditions employed for carrying out these different reactions are presented in three sections.

The use of soluble palladium (0) catalysts for the carbonylation of azirines results in the novel syntheses of two important classes of compounds. The reaction course is dependent on the nature of the ligands attached to the metal. Tetrakis(triphenylphosphine)palladium (0) catalyzes the conversion of azirines to β -lactams, while vinyl isocyanates are formed in a regiospecific reaction using bis(dibenzylideneacetone)palladium (0) as the catalyst. A mechanism is proposed for these reactions.

2-Styrylindoles were obtained in modest yields by the exposure of azirines to carbon monoxide, a palladium (0) catalyst, sodium hydroxide, benzene as the organic phase and benzyltriethylammonium chloride as the phase transfer agent. The reaction is sensitive to the atmosphere used.

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