Mild *N*-Alkylation of Amines with Alcohols Catalyzed by Acetate Ruthenium Complexes

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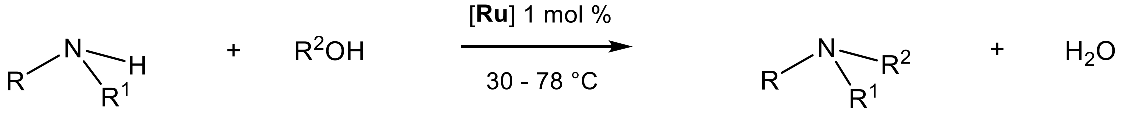
The formation of C-N bonds for the preparation of amines compounds is a reaction of high relevance for the synthesis of bulk and fine chemicals (1). The preparation of several drug molecules involves *N*-substitution transformations that are usually performed by reaction of amines with alkylating agents or via reductive amination. In this context, the catalytic *N*-alkylation of amines using environmentally friendly alcohols as alkylating reagents and affording water as only byproduct, is an attractive atom-economic way for the C-N bond formation (2,3).

We report here the straightforward synthesis of the carboxylate ruthenium complexes of formula $Ru(OAc)_2(diphosphane)(CO)_n$ (n = 0, 1). These compounds are efficient catalysts for the *N*-alkylation of amines using primary alcohols under mild reaction conditions, with an alcohol / amine molar ratio of 10-100. Evidence has been provided that in catalysis a monohydride species is formed through an equilibrium reaction.



R = alkyl, aryl; R^1 = H, alkyl
R^2 = alkyl

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