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Efficient and Selective Al-Catalyzed Alcohol Oxidation via Oppenauer Chemistry
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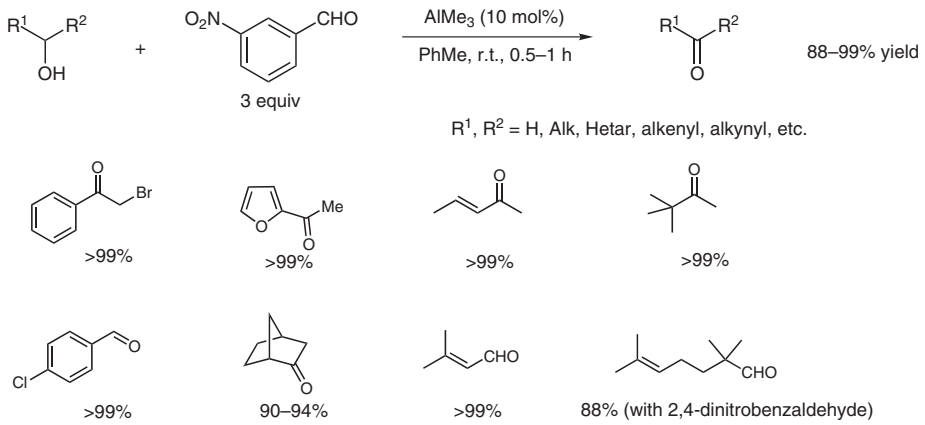
Highly Efficient Al-Catalyzed Alcohol Oxidation via Oppenauer Reaction



Significance: This publication presents an extremely simple, selective and versatile method for the oxidation of alcohols to carbonyl compounds, based on Oppenauer chemistry. Catalytic amounts of $AlMe_3$ in toluene (a commercial reagent) are used along with quite inexpensive *m*-nitrobenzaldehyde as a stoichiometric oxidant. A great variety of alcohols, including sterically hindered, allylic, propargylic and others were successfully subjected to oxidation by this method. This protocol is one of the most versatile and robust methods for the alcohol oxidation, reported to date.

Comment: While the Oppenauer oxidation has been known since 1930, only recently some attempts were made to improve this potentially very simple and attractive synthetic method. Since this process is reversible, the position of the equilibria depends on the relative oxidative potentials of the alcohols and ketones involved in the reaction. 3-Nitrobenzaldehyde is the optimal oxidant because of its high oxidative potential and availability. For several primary alcohols more active 2,4-dinitrobenzaldehyde was used. The excess of the oxidant as well as the nitrobenzylic alcohol formed can be easily separated from the product by filtration through a plug of alumina.

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Category
Metal-Mediated Synthesis

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SYNFACT of the month

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