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Ni-Catalyzed Alkylative Dimerization of Vinyl Grignard Reagents Using Alkyl Fluorides
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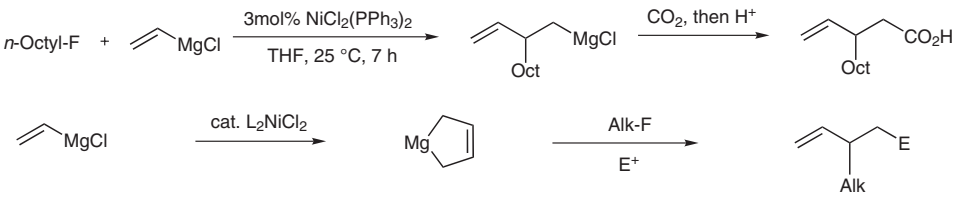
Category

Metal-Mediated Synthesis

Key Words

Grignard reagents
alkyl fluorides
alkylation

Ni-Catalyzed Alkylative Dimerization of Vinyl Grignard Reagents Using Alkyl Fluorides



Significance: For this reaction, alkyl fluorides were found superior as alkylating agents than alkyl chlorides and iodides. Vinylmagnesium chloride serves here as a useful C4-synthon for the construction of a branched carbon skeleton, potentially applicable in various synthetic schemes.

Comment: This approach will be useful for the synthesis of complex molecules and natural products. Alkyl fluorides are usually inert during the most synthetic transformations, thus serving as a 'protection' group before being activated by this method. The reaction itself looks very promising as a new tool for selective C–C bond formation. The tentative mechanism includes the formation of cyclic (2-butene-1,4-diyl)magnesium by reductive coupling of two vinyl moieties on the Ni center, which react further with alkyl fluorides.

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