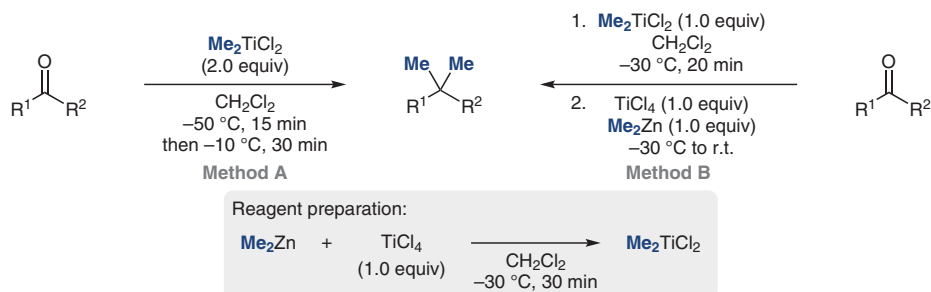
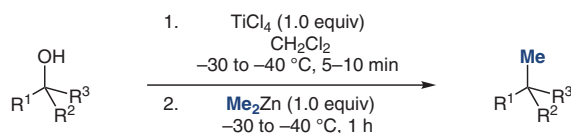
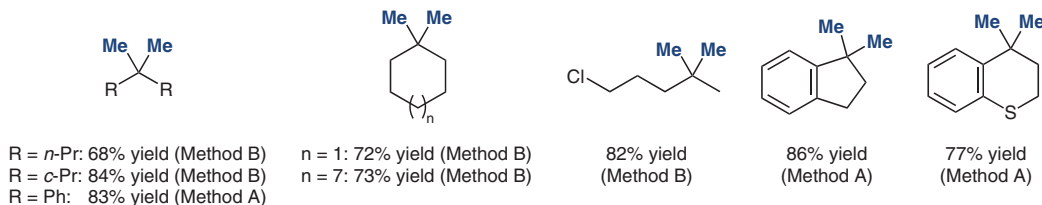


M. T. REETZ*, J. WESTERMANN, R. STEINBACH (UNIVERSITÄT MARBURG, GERMANY)
Direct Geminal Dimethylation of Ketones using Dimethyltitanium Dichloride
J. Chem. Soc., Chem. Commun. **1981**, 5, 237–239, DOI: 10.1039/C39810000237.

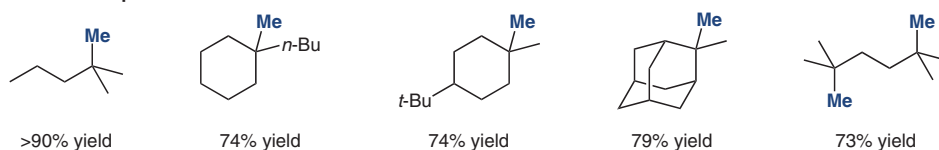
The Reetz Alkylation: Direct Geminal Dimethylation of Ketones Using Organotitanium Chemistry



Selected examples:



Selected examples:



Significance: The replacement of a carbonyl group by two methyl groups is of synthetic relevance since the geminal dimethyl structural motif is frequently found in natural products such as terpenes and steroids. In 1981, Reetz and co-workers introduced an efficient one-pot procedure to transform ketones and tertiary alcohols into the corresponding methylated hydrocarbons using dimethyltitanium dichloride.

Comment: The mechanism of this reaction involves the Grignard-type addition of dimethyl titanium dichloride to the ketone, followed by methylation of the resulting tertiary titanium alcoholate by another molecule of the organotitanium reagent. The high affinity of titanium for oxygen is the thermodynamic driving force of this reaction.

Review: D. Seebach *Angew. Chem. Int. Ed.* **2011**, 50, 96–101.