

Mukaiyama Aldol Reactions Catalyzed by a Trimeric Organo Aluminum(III) Alkoxide

윤성우, John G. Verkade¹, 김영조*
충북대학교 화학과; ¹Iowa State University 화학과
(ykim@chungbuk.ac.kr*)

The Mukaiyama addition of a silyl enol ether to an aldehyde (or ketone) leading to β -hydroxy carbonyl compounds is one of the most important carbon-carbon bond formation reactions in classical organic synthesis. Although Lewis acidic properties of aluminum compounds and their usefulness in organic transformations are well-known, relatively few examples have been reported to function as efficient promoters for the Mukaiyama aldol reaction. All previous use of aluminum compounds as catalysts for Mukayama reactions has focused on monomeric or dimeric aluminum systems; however, an example of a trimeric aluminum complex as a catalyst for this reaction has to our knowledge not been reported. We will demonstrate that Mukaiyama aldol reactions of $\text{Me}_2\text{C}=\text{C}(\text{OMe})\text{OSiMe}_3$ with a variety of aldehydes are efficiently catalyzed at room temperature by the sterically bulky C_3 -symmetric trimeric organo aluminum(III) alkoxide. And, we will show comparisons of its catalytic properties with the less sterically hindered analogue, the more sterically hindered analogue, a monomeric aluminum near-analogue, and a dimeric alumatrane.