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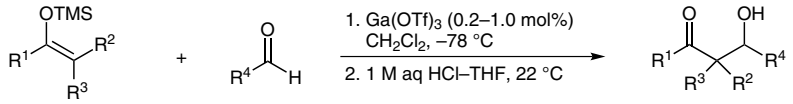
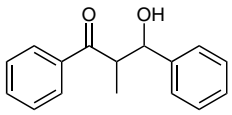
Gallium(III) Triflate Catalyzed Diastereoselective Mukaiyama Aldol Reaction by Using Low Catalyst Loadings
Eur. J. Org. Chem. **2013**, 6525–6529.

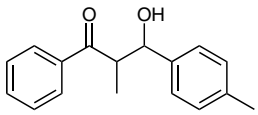
Mukaiyama Aldol Reaction Catalyzed by Gallium(III) Triflate



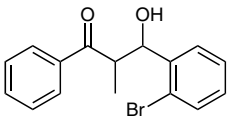
Selected examples:



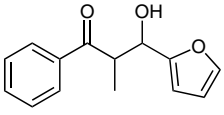
80% yield
syn/*anti* = 85:15
90% yield
syn/*anti* = 70:30
$Ga(OTf)_3$ (0.01 mol%)



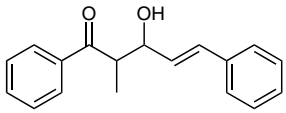
76% yield
syn/*anti* = 80:20



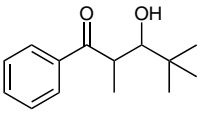
76% yield
syn/*anti* = 18:82



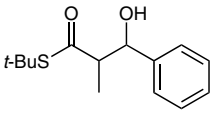
56% yield
syn/*anti* = 87:13



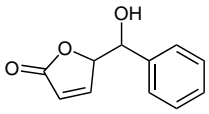
66% yield
syn/*anti* = 82:18



46% yield
syn/*anti* = 96:4



75% yield
syn/*anti* = 66:34



70% yield
syn/*anti* = 69:31

Significance: The authors report a mild method for the diastereoselective Mukaiyama aldol reaction. The process is catalyzed by gallium(III) triflate yielding to the corresponding β-hydroxy ketones in up to 92% yield.

Comment: The developed method is an efficient aldol reaction under mild conditions with a very low catalyst loading of gallium(III) triflate (0.01–1.0 mol%). This is the first example of a metal triflate acting as a safe and stable slow-releasing source of triflic acid in the Mukaiyama aldol reaction. Gallium(III) triflate is a stable, easy-to-handle white solid.

SYNFACTS Contributors: Hisashi Yamamoto, Atsuto Izumiseki
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