Mukaiyama Aldol Reaction Catalyzed by a MOF-Based Fe³⁺ Complex

Significance: A metal-organic framework (MOF) based Fe³⁺ catalyst was developed and applied to the Mukaiyama aldol reaction. Thus, the MOF-based Fe³⁺, UMCM-1-AMFesal, was prepared by condensation of MOF composite UMCM-1-NH₂ with acid anhydride **1** followed by metalation with Fe(acac)₃. The Mukaiyama aldol reaction of aldehydes **5a,b** and a silyl ketene acetal **6** was carried out with UMCM-1-AMFesal (0.1 mol% Fe) to give the corresponding β-hydroxy esters in 70±11% yield (**7a**) and 53±18% yield (**7b**). The catalyst was reused twice without loss of catalytic activity.

Comment: The preparation of UMCM-1-NH₂ (University of Michigan Crystalline Material-1-NH₂), consisting of 4,4',4''-benzene-1,3,5-triyltribenzoate (**3**), 2-amino-1,4-benzenedicarboxylic acid (**4**), and Zn(NO₃)₂, was previously reported (*Inorg. Chem.* **2009**, 48, 296). UMCM-1 was originally prepared by Matzger and co-workers (*Angew. Chem. Int. Ed.* **2008**, 4, 677).

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