K. K. TANABE, S. M. COHEN* (UNIVERSITY OF CALIFORNIA, SAN DIEGO, USA)

Engineering a Metal-Organic Framework Catalyst by Using Postsynthetic Modification
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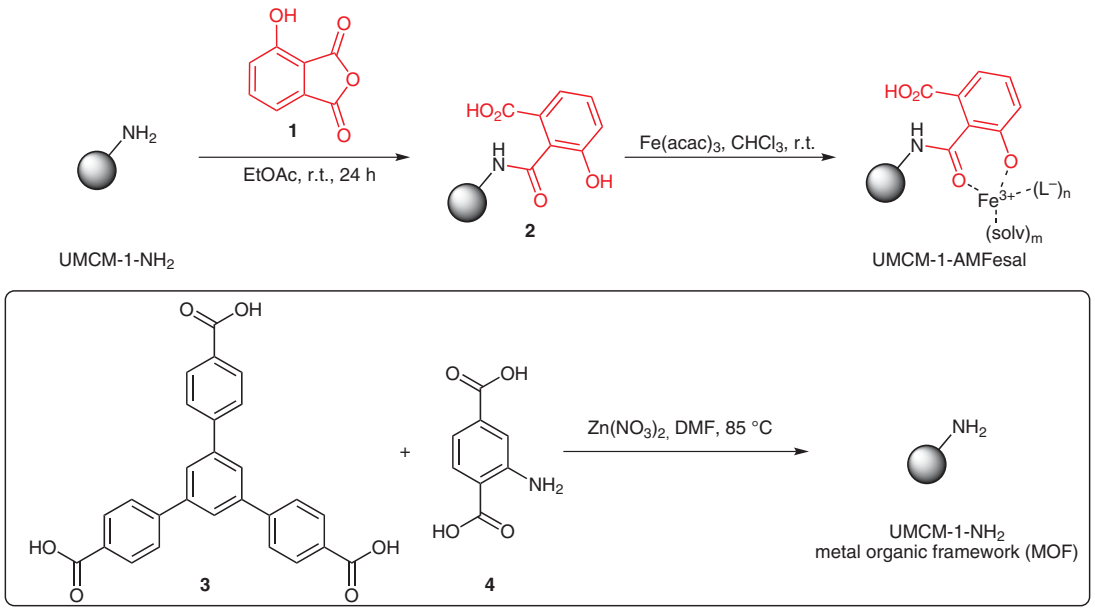
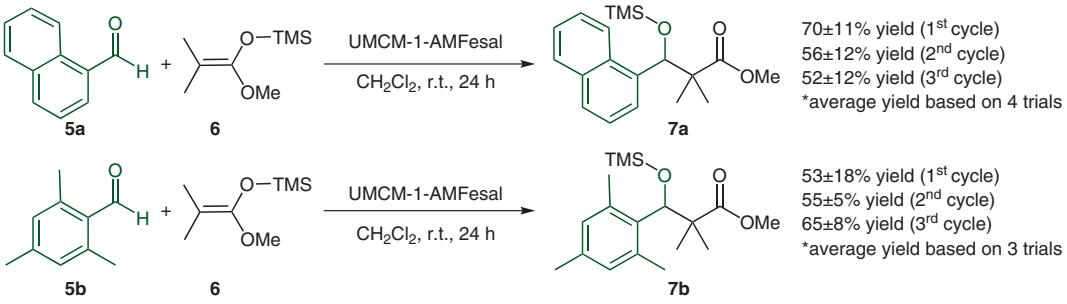
# Mukaiyama Aldol Reaction Catalyzed by a MOF-Based $Fe^{3+}$ Complex




**Significance:** A metal-organic framework (MOF) based $Fe^{3+}$ catalyst was developed and applied to the Mukaiyama aldol reaction. Thus, the MOF-based $Fe^{3+}$, UMCM-1-AMFesal, was prepared by condensation of MOF composite UMCM-1-$NH_2$ 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-$NH_2$ (University of Michigan Crystalline Material-1-$NH_2$), consisting of 4,4′,4″-benzene-1,3,5-triyl-tribenzoate (**3**), 2-amino-1,4-benzenedicarboxylic acid (**4**), and $Zn(NO_3)_2$, 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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**Category**
Polymer-Supported Synthesis

**Key words**
metal-organic framework
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