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Reusable Oxidation Catalysis Using Metal-Monocatecholato Species in a Robust Metal-Organic Framework
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Oxidation of Secondary Alcohols with UiO-66-Cr MOF Catalyst

Category

Polymer-Supported
Synthesis

Key words

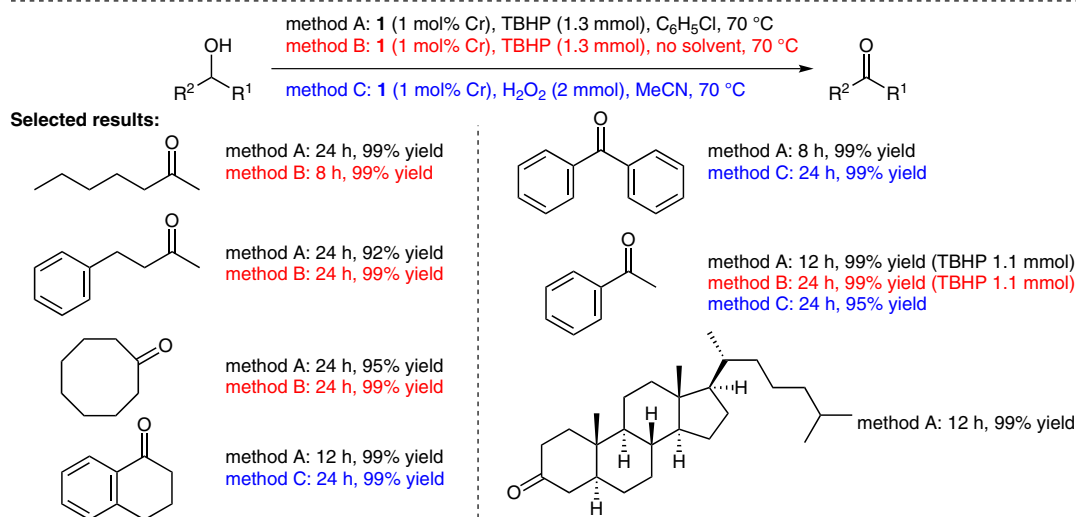
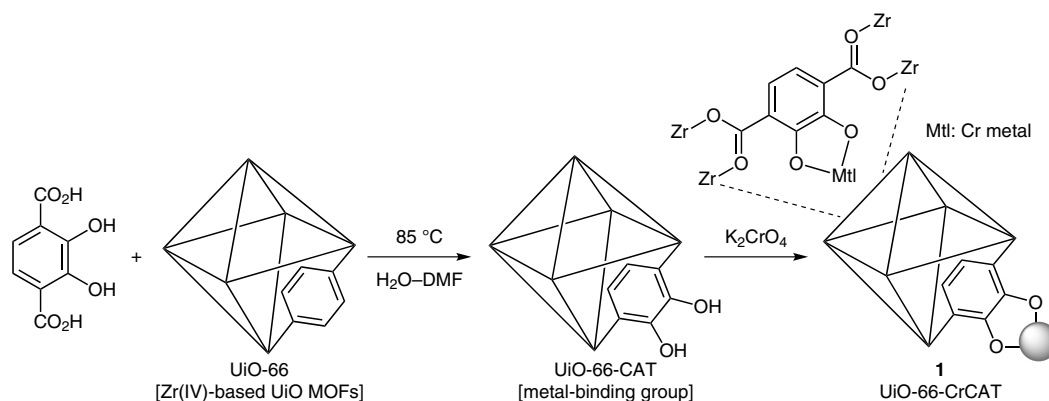
metal-organic
framework

chromium-
monocatecholato
moieties

oxidation

heterogeneous
catalysis

SYNFACT
of the month



Significance: The metal-organic framework **1**, UiO-66-CrCAT, was prepared from zirconium(IV)-based UiO-66 (UiO = University of Oslo) and aqueous K₂CrO₄ under acidic conditions of pH 3. The oxidation reaction of secondary alcohols was carried out with TBHP in the presence of UiO-66-CrCAT (1 mol% chromium) in chlorobenzene (method A) or under solvent-free conditions (method B) to afford the corresponding ketones.

Comment: The catalyst was characterized by SEM, XPS, X-ray absorption near-edge structure (XANES) and extended X-ray absorption fine structure (EXAFS) spectroscopy, BET, XRD, and ICP-OES analyses. The catalyst was recovered by filtration and reused four times without significant loss of the catalytic activity and without leaching of chromium from the catalyst in the oxidation of 2-heptanol. Further, reactions of *sec*-benzylic alcohols proceeded with H₂O₂ in acetonitrile (method C).

SYNFACTS Contributors: Yasuhiro Uozumi, Yoichi M. A. Yamada, Heeyoel Baek
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