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Facile Fabrication of Magnetically Recyclable Metal-Organic Framework Nanocomposites for Highly Efficient and Selective Catalytic Oxidation of Benzylic C–H Bonds
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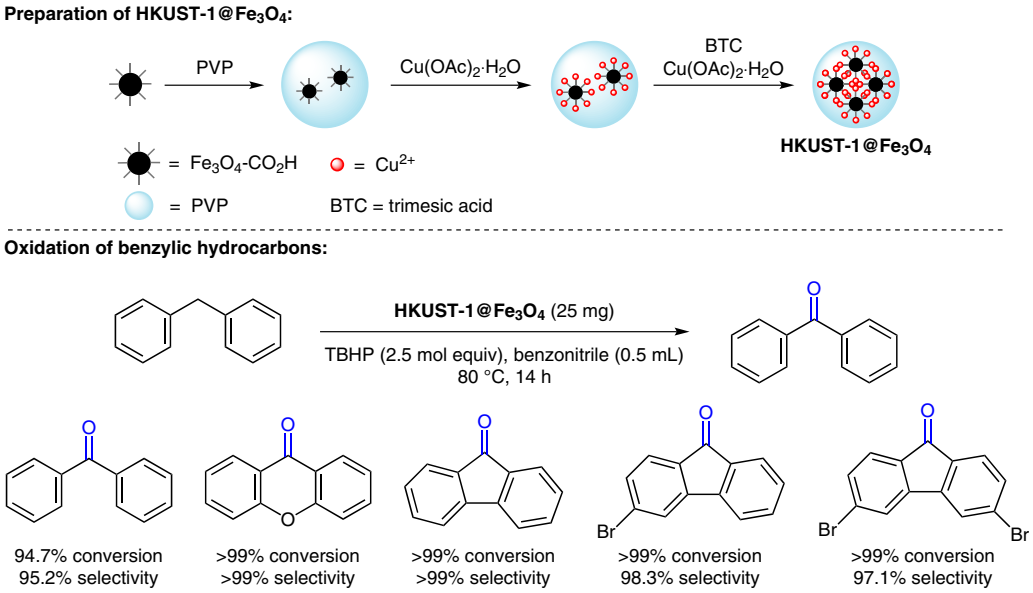
# Oxidation of Benzylic C–H Bonds with HKUST-1@$Fe_3O_4$




**Significance:** The magnetic core–shell nanocomposites HKUST-1@$Fe_3O_4$ were prepared from $Fe_3O_4$-$CO_2H$ (Φ 20 nm), polyvinylpyrrolidone (PVP), $Cu(OAc)_2$, and trimesic acid (BTC), in which the iron-based nanoparticles were encapsulated by the resulting HKUST-1 shell [for the copper-organic framework of $Cu(OAc)_2$ and trimesic acid, see: Chui et al. *Science* **1999**, *283*, 1148]. The oxidation of benzylic C–H bonds was carried out with HKUST-1@$Fe_3O_4$ and TBHP to give the corresponding desired carbonyl products in up to >99% conversion and >99% selectivity.

**Comment:** The catalyst was characterized by SEM, HR-TEM, PXRD, BET, and FT-IR analyses. Elemental analysis revealed a ratio of copper and iron of 19.34% and 28.63%. The catalyst was recovered by an external magnet and reused twice without significant loss of the catalytic activity.

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**Category**
**Polymer-Supported Synthesis**

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**metal-organic framework**
**oxidation**
**iron oxide**
**heterogeneous catalysis**