Electronic Supplementary Information

Metal-organic frameworks supported ionic liquids for lipase immobilization: design, characterization and investigation of catalytic performance

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Preparation of Fe_3O_4 nanoparticles

Firstly, 75 mL of ethylene glycol solution containing 2.0 g of $FeCl_3 \cdot 6H_2O$ and 3.6 g of NaAC was stirred for 1.5 h, then transferred to a high pressure reactor, and reacted for 16 h at 200 °C. Finally, the obtained black powder was cooled and collected.

Preparation of Na_2BDC

2.0 g of BDC and 1.0 g of NaOH were dispersed into 20 mL deionized water under stirring. The mixture was allowed to react 1 h at room temperature to obtain a transparent solution. When the reaction was finished, the mixture was subsequently precipitated in 300 mL cold isopropanol. The precipitation was washed with isopropanol to reach pH = 7 and dried in an oven at 75 ºC.

Characterizations of supports

Fourier transform infrared spectra (FTIR) were conducted on a Nicolet 670 spectrometer (Thermo, USA) at a frequency range of 400-4000 cm^{-1}. The X-ray diffraction spectra (XRD) was performed on a Bruker D8-Advance diffractometer (Germany) under the scanning rate of 4-8°min^{-1}. The magnetic properties of supports were determined using a vibrating sample magnetometer (VSM, Quantum Design, USA) at room temperature (RT) at a magnetic field range of 30 to -30 KOe. The WCA values were determined using the sessile drop mode. Transmission electron microscopy (TEM) was performed using a Tecnai G2 F20 (FEI, USA). Circular dichroism (CD) (190−260 nm) was performed using a JASCO J1500 (Japan) spectrometer at RT. Scanning electron microscopy (SEM) and energy dispersive spectrometry (EDS) were conducted using a Hitachi S4800 (Japan).