Category

Polymer-Supported Synthesis

Key words

mesoporous copper(I) oxide

photocatalytic aza-Henry reaction

visible light

oxygen

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Cu_2O Mesoporous Spheres with a High Internal Diffusion Capacity and Improved Catalytic Ability for the aza-Henry Reaction Driven by Visible Light

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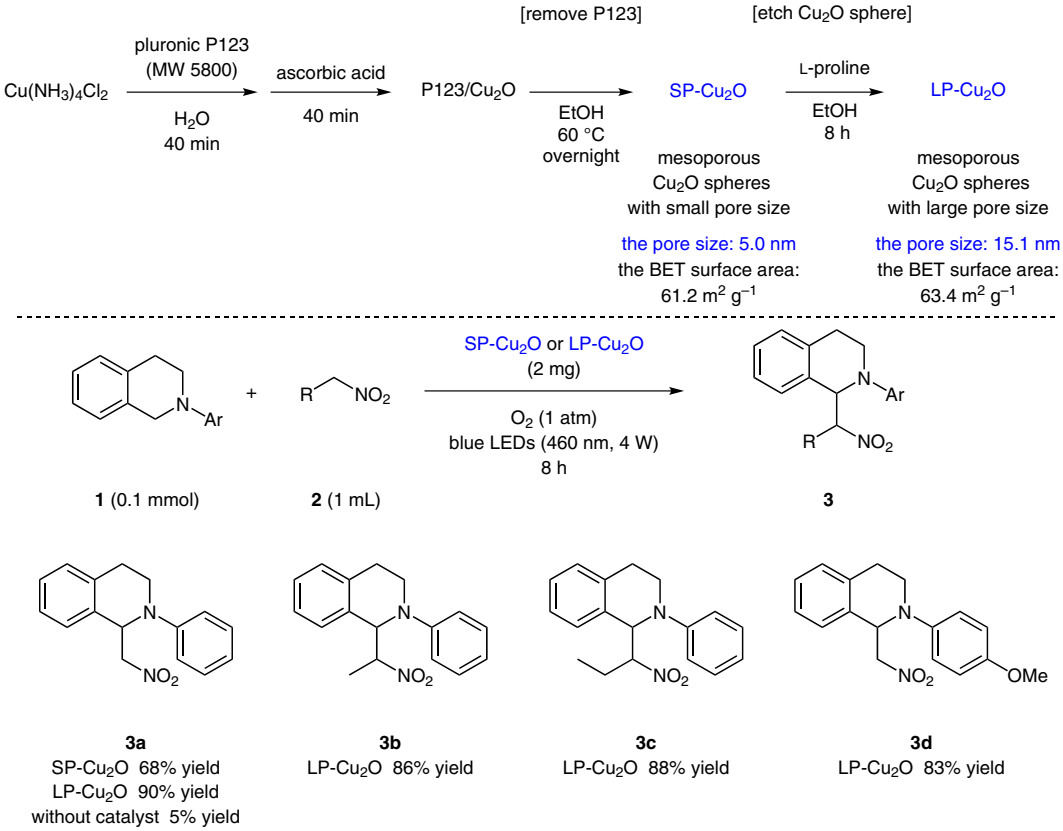
Visible-Light-Promoted aza-Henry Reaction Using Mesoporous Cu_2O



Significance: Mesoporous copper(I) oxide spheres with different pore sizes (5 nm for SP-Cu_2O and 15 nm for LP-Cu_2O) were prepared and applied to the visible-light-promoted aza-Henry reaction. The reaction of *N*-aryl tetrahydroisoquinolines **1** with nitroalkanes **2** was carried out in the presence of LP-Cu_2O and molecular oxygen under the irradiation of blue LEDs to afford the corresponding coupling products **3** in 83–90% yield. The reaction without catalyst gave **3a** in only 5% yield under otherwise similar conditions.

Comment: The catalysts were characterized by SEM, TEM, XRD, and N_2 adsorption–desorption analyses. For the formation of **3a**, LP-Cu_2O was recovered by centrifugation and reused four times without significant loss of catalytic activity. SEM observation of LP-Cu_2O after the fifth run showed no change of its morphology. The preparation of mesoporous Cu_2O spheres with small pore size was previously reported by Shang, Zhang and Guo (*J. Mater. Chem*. **2012**, *22*, 856).

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