

Electronic Supplementary Information (ESI) for

Redox-active Cu(I) Boron Imidazolate Framework for Mechanochromic and Catalysis

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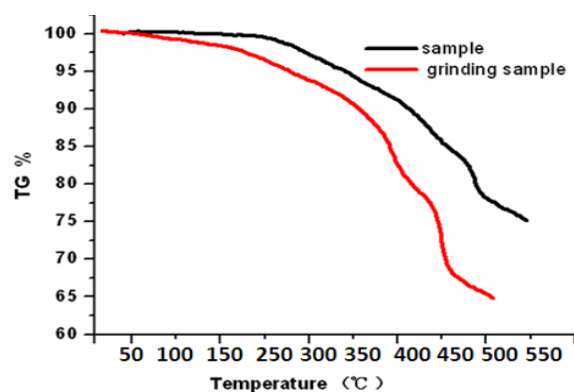


Fig. S1 Thermogravimetric analyses of **BIF-34** and its ground sample.

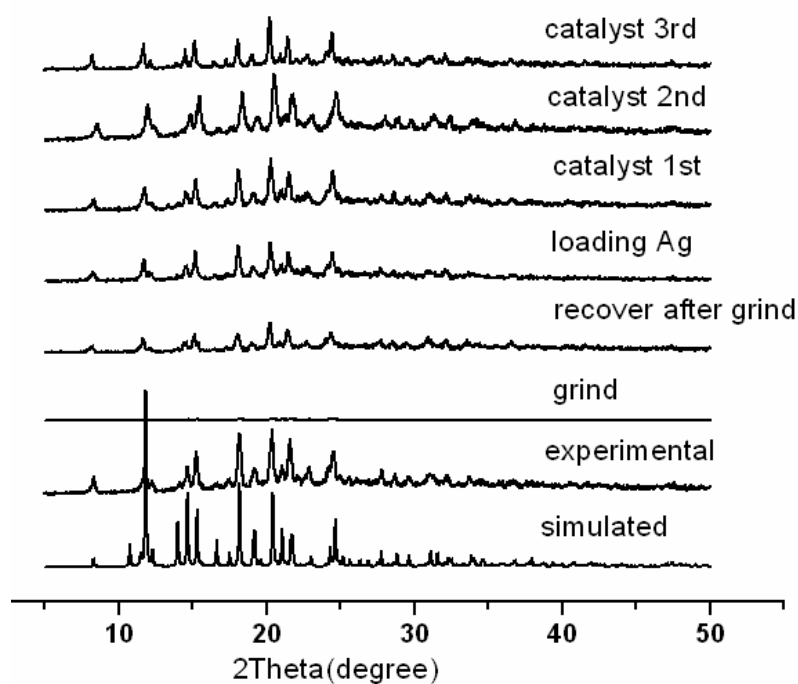


Fig. S2 The PXRD patterns of **BIF-34** under different conditions.

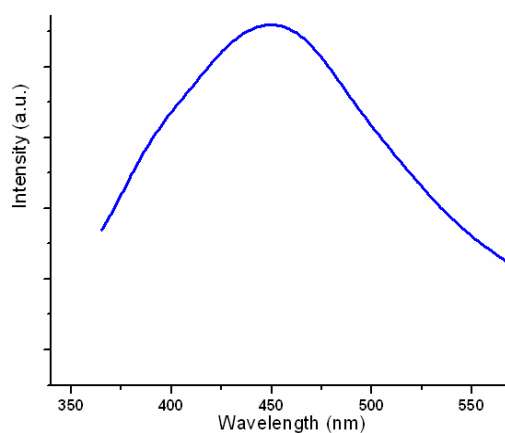


Fig. S3 The solid-state emission spectra ($\lambda_{\text{exc}} = 355 \text{ nm}$) for the ligand sample of KBH (dm-bim)₃.

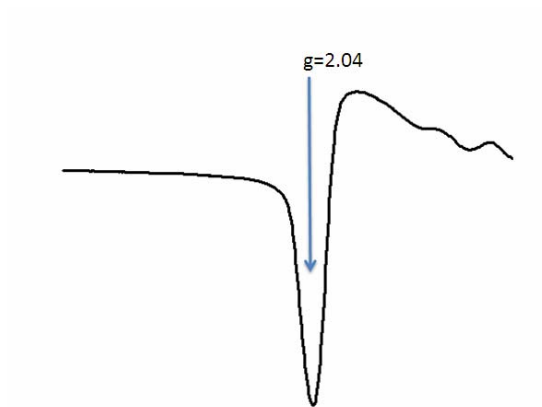


Fig. S4 EPR spectrum of Ag@BIF-34.

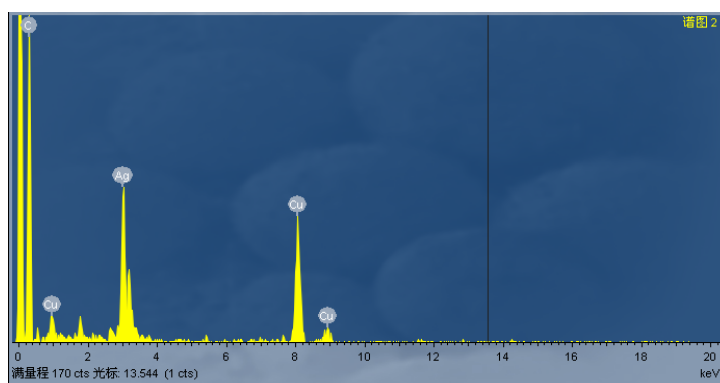


Fig. S5 EDS of Ag@BIF-34.

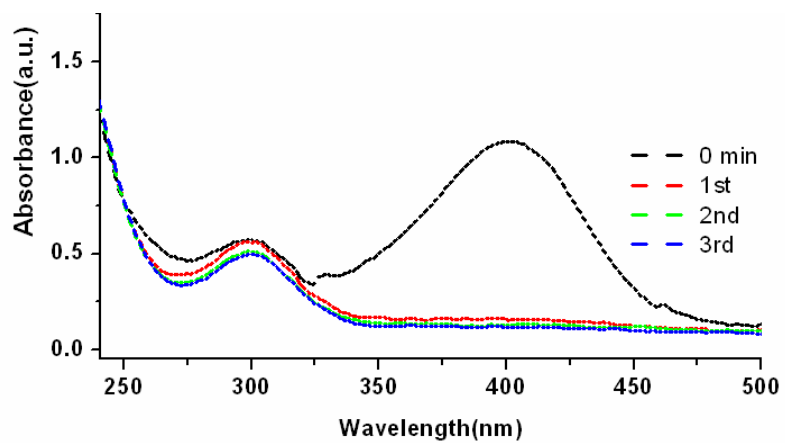


Fig. S6 Recycling test on reduction of 4-NP over Ag@BIF-34.

Table S1. The test the amount of the Ag nanoparticles after each cycle of the catalytic reaction for the reduction of 4-nitrophenol by ICP-AES.

Runs for catalyst of Ag@BIF-34	the amount of the Ag nanoparticles
1st	2.80%
2nd	2.71%
3rd	2.61%

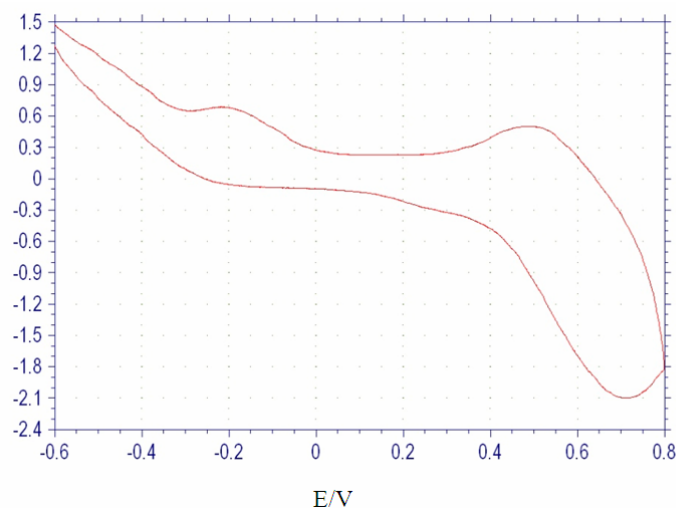


Fig. S7 Cyclic voltammograms of **BIF-34** films on FTO substrates measured in DMF solution at a scan rate of 50 mVs^{-1} .

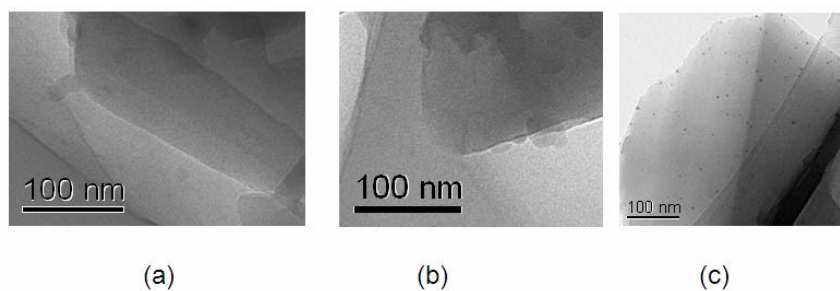


Fig. S8 (FE)TEM images immersed in a aqueous solution of AgNO_3 (a: **BIF-1-Cu**, b: kB(im)_4 , c: KBH(dm-bim)_3). In order to investigate the active B–H bonds from tridentate coordinated BH(dm-bim)_3^- ligands, we did some control experiments. We chose the tetradentate coordinated **BIF-1-Cu** and tetradentate B(im)_4^- ligand¹. $\text{Ag}(0)$ nanoparticles can not be obtained under the same conditions as **Ag@ BIF-34**. However, the potentially active B–H bonds from tridentate coordinated BH(dm-bim)_3^- ligand could sever as the reducing agent and contribute to the direct formation of Ag nanoparticles.

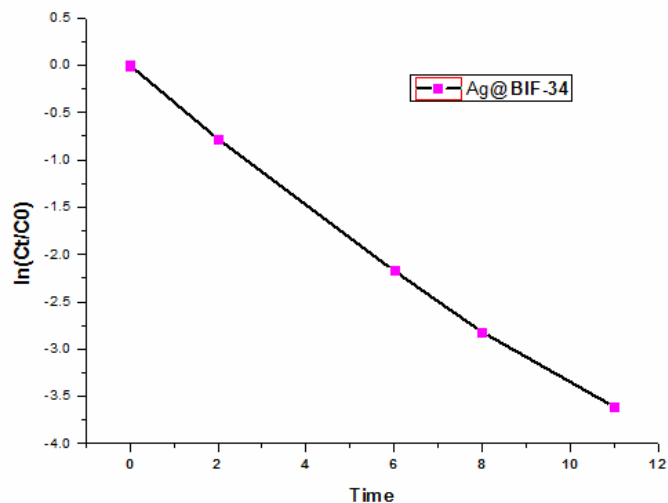


Fig. S9 The kinetics study of the catalytic reaction on reduction of 4-NP over Ag@BIF-34.

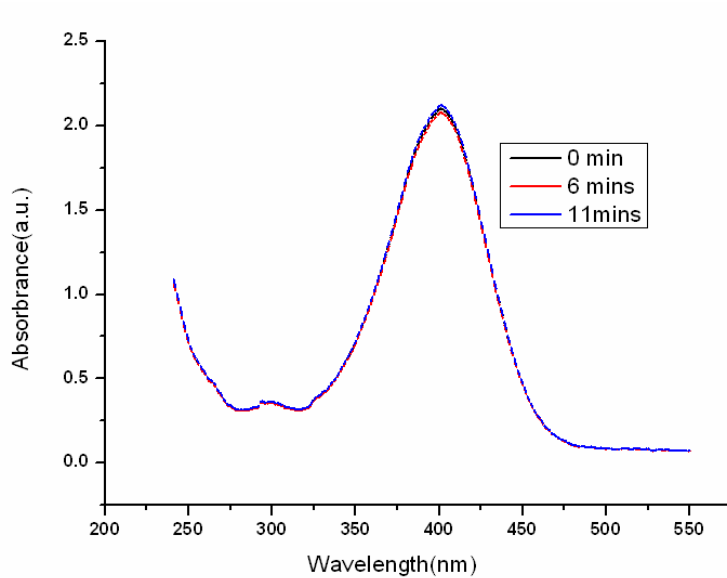


Fig. S10 View of UV-vis spectra BIF-34 immersed 4-NP (showing no gradual reduction).