Magnetic N-containing carbon spheres derived from sustainable chitin for selective oxidation of C-H bonds

Yunrui Zhang,ab Haihong Niu,ab Xiangjie Zhang,ab Junxiu Pan,ab Yang Dong,ab Haijun Wangab and Yongjun Gao*ab

a Key Laboratory of Chemical Biology of Hebei Province, College of Chemistry and Environmental Science, Hebei University, Hebei University, Baoding 071002, China.
b Key Laboratory of Medicinal Chemistry and Molecular Diagnosis of Ministry of Education, College of Chemistry and Environmental Science, Hebei University, Hebei University, Baoding 071002, China.

Email: yjgao@hbu.edu.cn

Figure S1. XPS full spectra, C 1S spectra, N 1S spectra, Fe2p spectra of the Fe@NC800 after hydrochloric washing.

The catalyst Fe@NC (10 mg) was boiled in 3 mL CH2Cl2 for five hours and then filtered out. The filtrate was used as solvent to conduct the next blank reaction. The detailed reaction conditions were as following: trans-stilbene 1 mmol, filtrated CH2Cl2 2 mL, urea 0.5 mmol, 373K.

Table S1 The catalytic performance of the filtrate of Fe@NC dispersion.
**Figure S2.** XPS full spectra, C 1S spectra, N 1S spectra, Fe2p spectra of the Fe@NC800 after the reaction.

<table>
<thead>
<tr>
<th>Entry</th>
<th>trans-stilbene (mmol)</th>
<th>TBHP (uL)</th>
<th>Con (%)</th>
<th>Sel (%)</th>
<th>trac</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>800</td>
<td>95.6</td>
<td>98.9</td>
<td>1.1</td>
</tr>
</tbody>
</table>

**Figure S3.** The oxidation results of styrene and ethylbenzene with Fe@NC as catalyst.