Facile crosslinking synthesis of hyperbranch-substrate nanonetwork magnetite nanocomposite for the fast and highly efficient removal of lead ions and anionic dyes from aqueous solutions

Mingqiang Liu, Baochang Zhang, Huicai Wang, Fei Zhao, Yuan Chen, and Qiang Sun

a School of Environmental and Chemical Engineering, Tianjin Polytechnic University, Tianjin 300387, China
b State Key Laboratory of Separation Membranes and Membrane Processes, Tianjin Polytechnic University, Tianjin 300387, China

* Corresponding author.

Tel.: +086 22 83955859.

Fax: +086 22 83955859.

E-mail address: wanghuicai@tjpu.edu.cn.

Figure. S1 EDS spectra of Fe₃O₄-HBPA after adsorption of Pb²⁺.
Table S1. BET Surface Areas, Pore Volumes, and Average Pore Size of Fe$_3$O$_4$-NH$_2$ and Fe$_3$O$_4$-HBPA.

<table>
<thead>
<tr>
<th>sample</th>
<th>$S_{\text{BET}}^a$ (m$^2$·g$^{-1}$)</th>
<th>$V_{\text{t}}^b$ (cm$^3$·g$^{-1}$)</th>
<th>$D_p^c$ (nm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe$_3$O$_4$-NH$_2$</td>
<td>29.525</td>
<td>0.046</td>
<td>3.013</td>
</tr>
<tr>
<td>Fe$_3$O$_4$-HBPA</td>
<td>36.599</td>
<td>0.055</td>
<td>2.805</td>
</tr>
</tbody>
</table>

a Specific surface area (BET).
b Total pore volume.
c Average pore size.

Figure. S2. Form mechanism of methyl orange in aqueous solution.