Supporting Information

Stimuli-responsive hyperbranched poly(amidoamine)s integrated with thermal and pH sensitivity, reducible degradability and intrinsic photoluminescence

Chen Zhan, Xiao-Bin Fu, Yefeng Yao, Hua-Ji Liu* and Yu Chen*

a Tianjin Key Laboratory of Molecular Optoelectronic Science, Department of Chemistry, School of Sciences, Tianjin University, and Collaborative Innovation Center of Chemical Science and Engineering (Tianjin), Tianjin 300354, People’s Republic of China

b Department of Physics & Shanghai Key Laboratory of Magnetic Resonance, East China Normal University, North Zhongshan Road 3663, Shanghai 200062, People’s Republic of China

Corresponding author, Tel.: +86-22-27403475; fax: +86-22-27403475

E-mail: liuhuaiji@tju.edu.cn, chenyu@tju.edu.cn
Fig. S1 Typical $^1$H NMR full spectrum of HPA·HCl (HPA-S50 as the sample)
Fig. S2 Assignments of $^1$H NMR signals of HPA·HCl (HPA-S0 and HPA-S100 as the representatives)
Fig. S3 $^1$H NMR spectra of HPA-C4s
**Fig. S4** Comparison of the $^{15}$N NMR spectra of HPAs and HPA-C4s
Fig. S5 GPC diagrams of HPA-C4s
Fig. S6 Temperature-dependent DLS curve of HPA-C4 aqueous solution (polymer concentration is 5 mg/mL).
Fig. S7 Typical fluorescence excitation and emission spectra of (A) HPA-S100-C4, (B) HPA-S50-C4 and (C) HPA-S0-C4 in water with different concentration (slit widths of excitation and emission are set to be 10 nm and 10 nm, respectively)
Fig. S8 Typical fluorescence excitation and emission spectra of (A) HPA-S100-C4, (B) HPA-S50-C4 and (C) HPA-S0-C4 in water with different pH (polymer concentration is 5 mg/mL; slit widths of excitation and emission are set to be 10 nm and 10 nm, respectively)
Fig. S9 Quantum yield measurements

<table>
<thead>
<tr>
<th></th>
<th>S100</th>
<th>S75</th>
<th>S50</th>
<th>S25</th>
<th>S0</th>
</tr>
</thead>
<tbody>
<tr>
<td>QY (%)</td>
<td>11.4</td>
<td>11.0</td>
<td>13.7</td>
<td>10.3</td>
<td>10.3</td>
</tr>
</tbody>
</table>
Fig. S10 Typical fluorescence excitation and emission spectra of (A) HPA-S100-C4, (B) HPA-S50-C4 and (C) HPA-S0-C4 in water oxidized by air for different time (polymer concentration is 5 mg/mL; slit widths of excitation and emission are set to be 10 nm and 10 nm, respectively)