

Electronic Supplementary Information

## Facile One-Pot Approach for Preparing a Fluorescent and Biodegradable Hyperbranched Polymer

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### Materials

1-(2-aminoethyl) piperazine (AEPZ) and methyl acrylate (MA) were purchased from Sigma-Aldrich and used as received. All reagents and solvents of analytical grade are purchased from commercial suppliers and used without further purification unless stated otherwise.

### Sample preparation

To prepare the hyperbranched fluorescent polymers, 2.2 mL of 16.7 mM 1-(2-aminoethyl) piperazine (AEPZ) and 1.0 mL of 11.1 mM methyl acrylate (MA) were added into a 20 mL glass tubes. The polymerization was carried out at 40°C or 80°C for 48 h in a sealed glass tube after three freeze-pump-thaw cycles. The white solid sample was dissolved in DI water. The purification step via precipitation in diethyl ether can effectively erase the unreacted monomer or low molecular weight products to narrow the molecular weight distribution. The resultant product with  $M_w = 1.35 \times 10^5 \text{ g} \cdot \text{mol}^{-1}$  (for polymerization at 80°C, GPC method) and  $M_w = 1.18 \times 10^5$

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$\text{g}\cdot\text{mol}^{-1}$  (for polymerization at  $40^\circ\text{C}$ , GPC method) were obtained at  $> 90\%$  yield after freeze-drying.

### **Characterization**

$^1\text{H}$  NMR and  $^{13}\text{C}$  NMR spectra were recorded on a 300 MHz Varian Mercury 300 at ambient temperature. Gel permeation chromatographic (GPC) analysis was carried out using a Waters 1525 pumping system (USA) at the flow rate of 0.5 mL/min with an Ultrahydrogel 500 column (Waters) The eluent was DI water. UV-visible spectra were obtained using a Shimadzu UV-2550 spectrometer. Steady-state fluorescence spectra at room temperature were measured with a RF-5301PC fluorescence spectrophotometer.