Electronic Supplementary Material (ESI) for Journal of Materials Chemistry C.

Supporting Information for:

Fluorescent Phosphine Oxide-Containing Hyperbranched Polyesters: Design, Synthesis and Its Application for Fe^{3+} Detection

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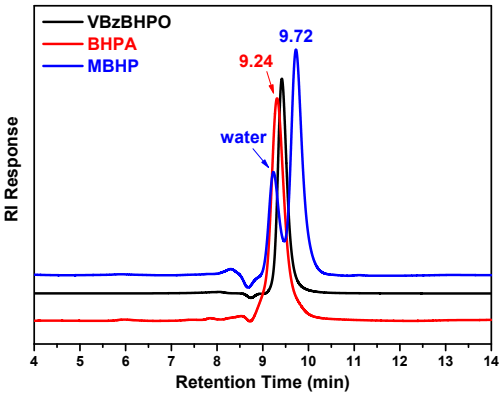

Figure. S1 HPLC elution curves of VBzBHPO, BHPA and MBHP.

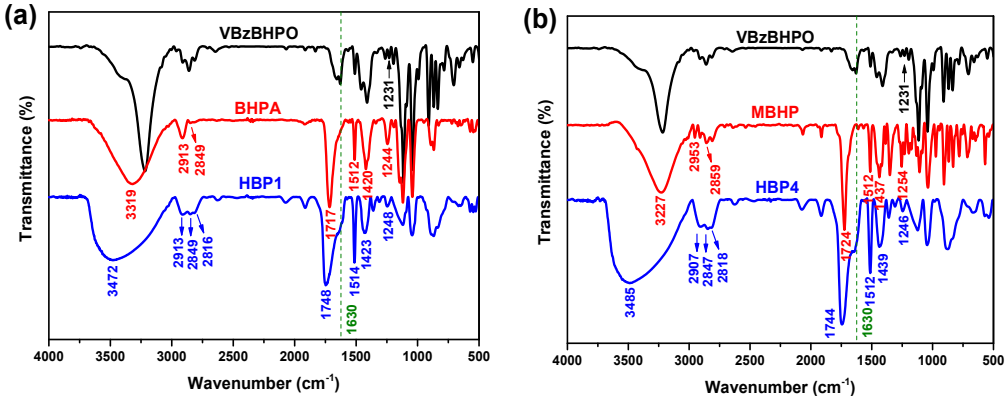

Figure. S2 FT-IR spectra of VBzBHPO, (a) BHPA and HBP1 and (b) MBHP and BHP4.

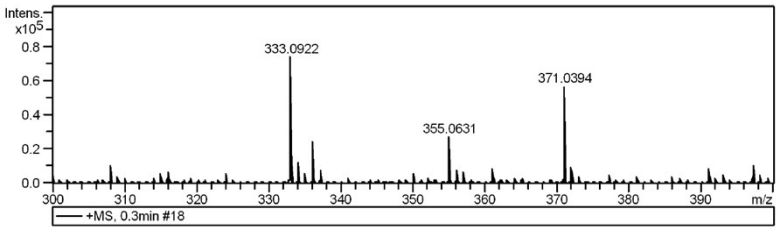

Figure. S3 Mass spectrum of BHPA.

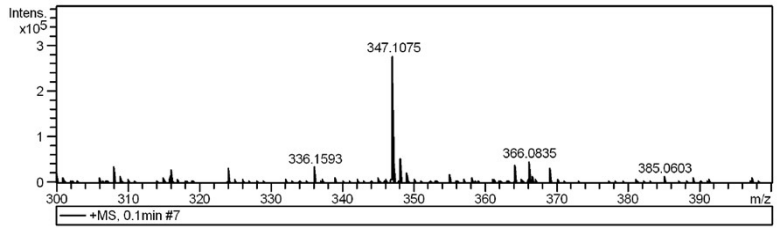

Figure. S4 Mass spectrum of MBHP.

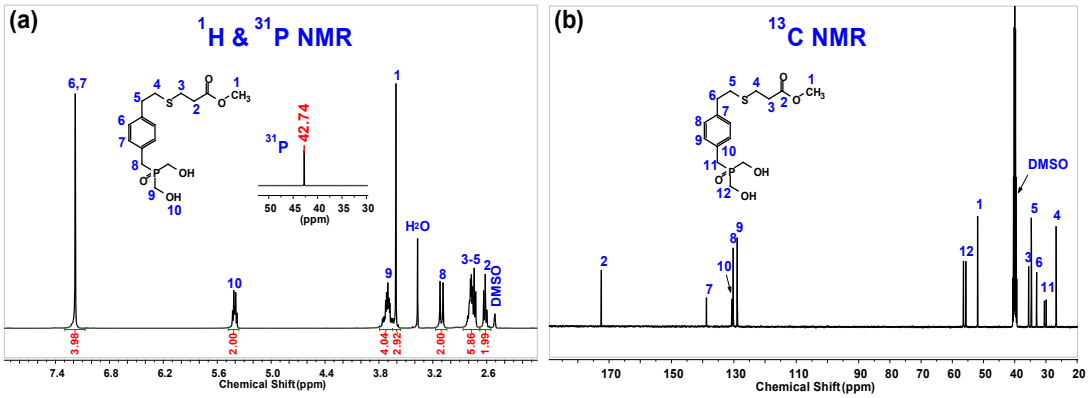

Figure. S5 (a) ^{1}H and (b) ^{31}P NMR spectra of MBHP.

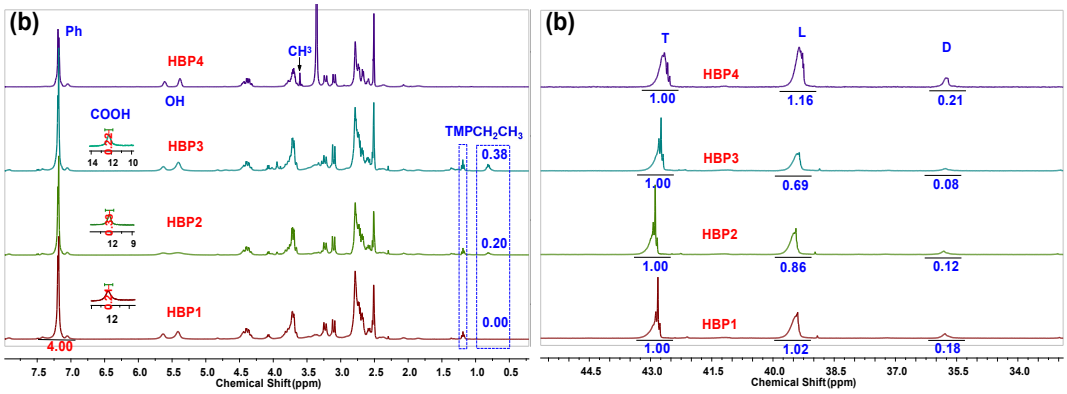

Figure. S6 (a) ^{1}H and (b) ^{31}P NMR spectra of HBPs.

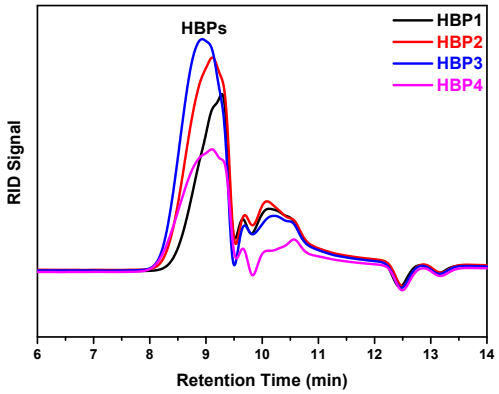

Figure. S7 GPC elution curves of HBPs.

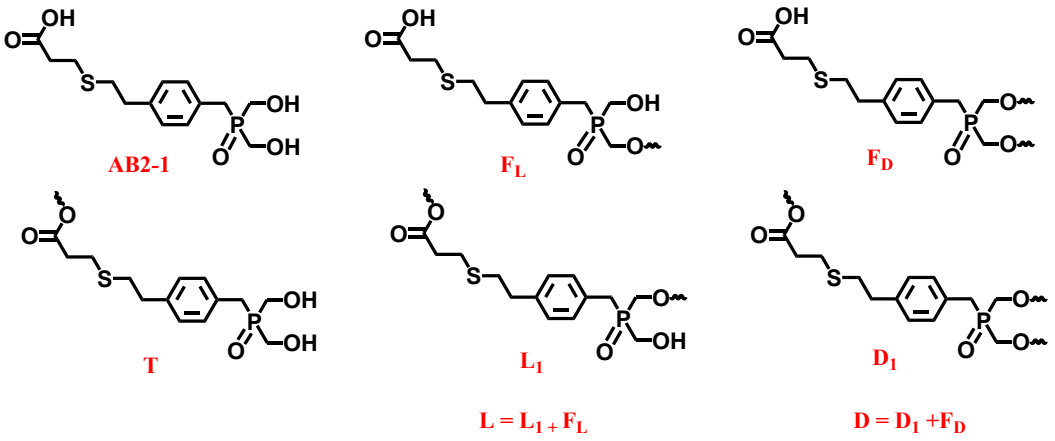

Figure. S8 Possible repeating units in the HBPs

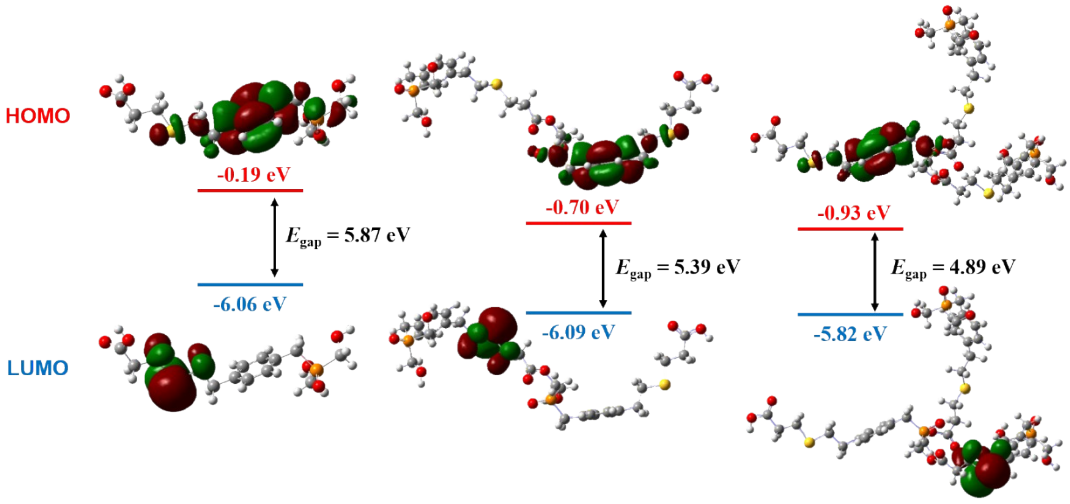

Figure. S9 Theoretical calculations based on single polymer chains of HBPs with n = 1, 2 and 3 constitutional units at (TD-DFT) B3LYP/6-31 (d) level. HOMO: the highest occupied molecular orbital, LUMO: Lowest unoccupied molecular orbital, Egap: energy gap between LOMO and HUMO.

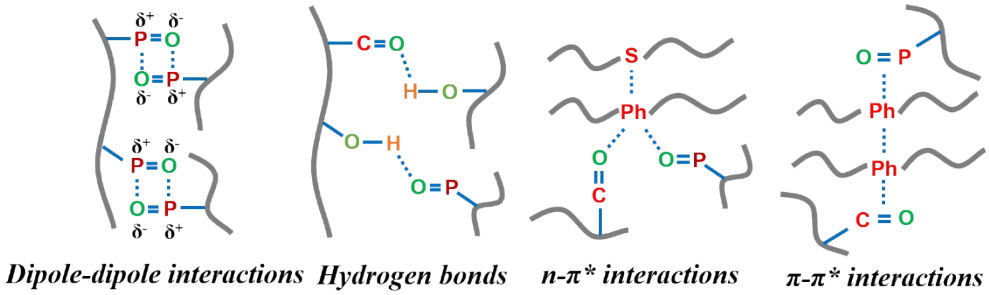

Figure. S10 The possible interaction models in the clusters of HBPs

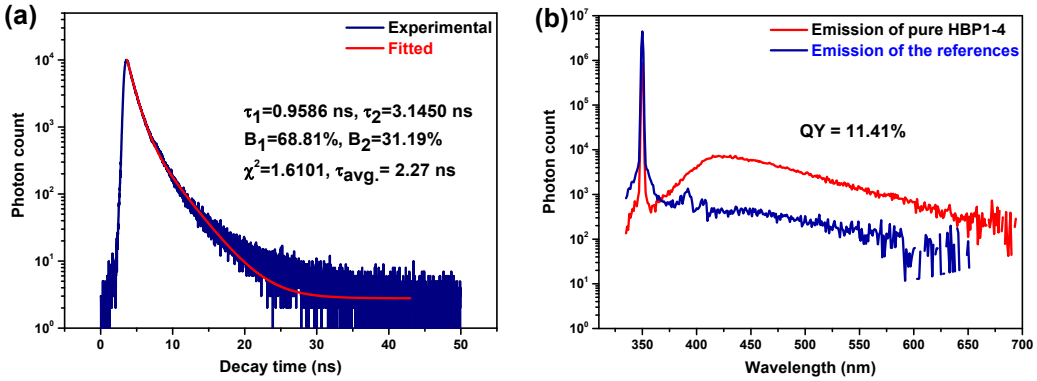

Figure. S11 (a) Transient photoluminescence decay curve and (b) absolute fluorescence quantum yield of pure HBP2. λ_{ex} = 350 nm.

The fluorescence lifetime of HBP2 was calculated as follows:

$$R(\tau) = A + B_1 \exp\left(-\frac{\tau}{\tau_1}\right) + B2exp(-\frac{\tau}{\tau_2})$$

$$\tau = (B_1{\tau_1}^2 + B_2{\tau_2}^2)/(B_1\tau_1 + B_2\tau_2)$$