

Supporting Information

for

Turn-on fluorogenic and chromogenic detection of Fe³⁺ and Cr³⁺ in completely water media with polyacrylamide covalent bonding rhodamine B using diethylenetriamine as a linker

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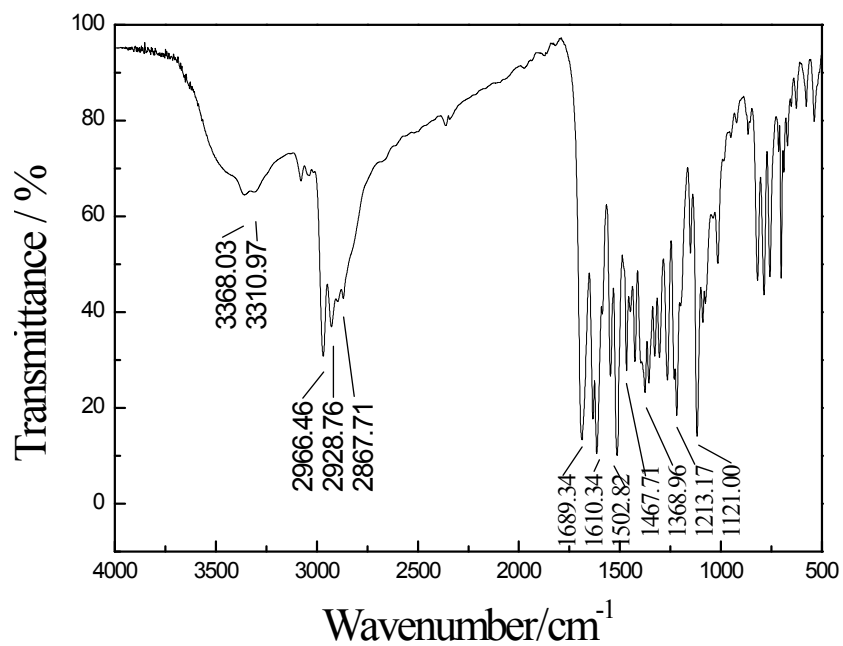


Fig. S1. FTIR spectrum of Rhodamine B-yl diethylenetriamine (RBD).

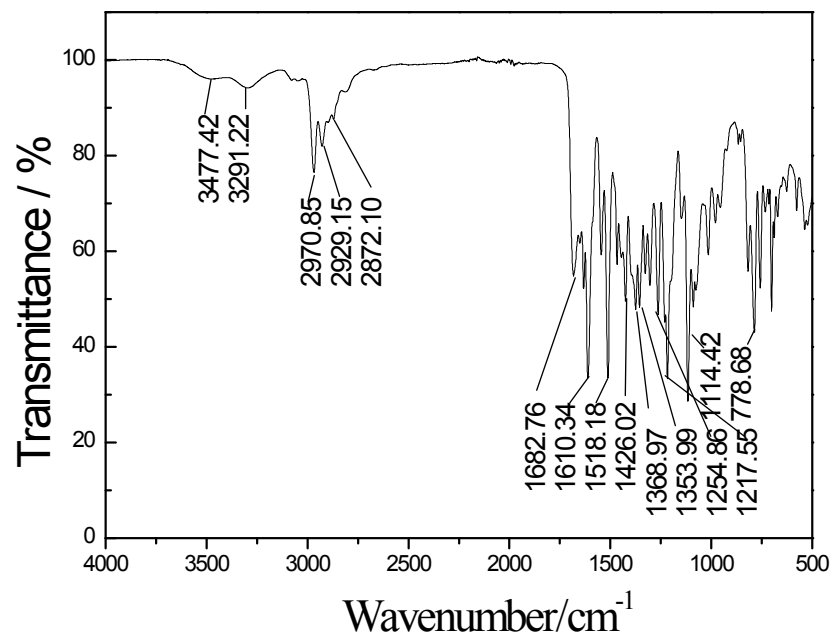


Fig. S2 FTIR spectrum of N-acryl-N''-(rhodamine B-yl) diethylenetriamine (ARBD).

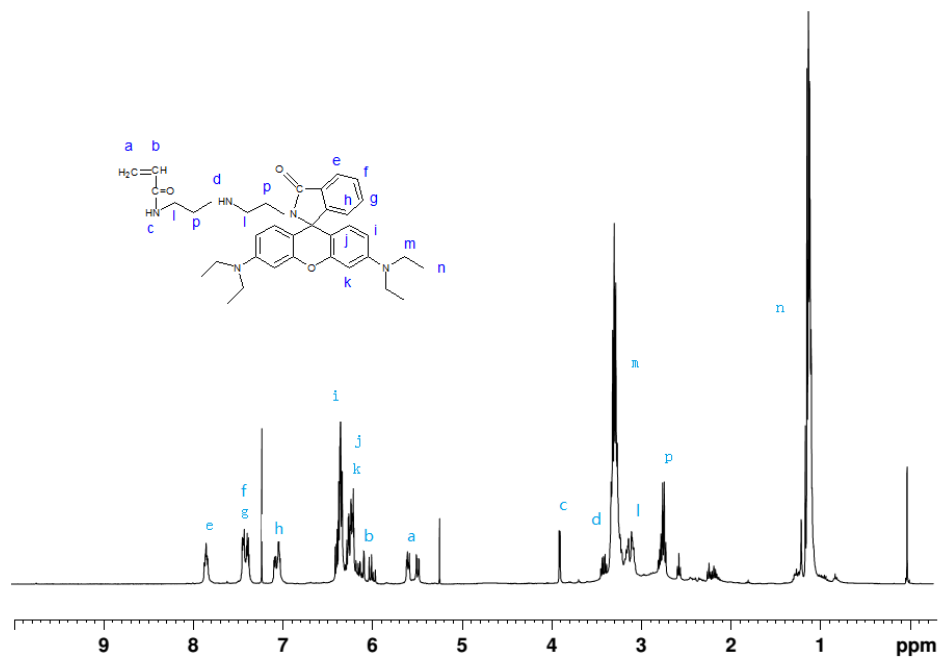


Fig. S3. ^1H NMR spectrum of N-acryl-N''-(rhodamine B-yl) diethylenetriamine (ARBD).

^1H NMR (400 MHz, CDCl_3) of ARBD (d, ppm): 7.398 (m, 1H, Ph) **e**; 7.366 (m, 2H, Ph)**f g**; 7.203 (m, 1H, Ph) **h**; 6.384-6.304 (m, 4H, Ph) **i**; 6.254-6.203 (dd, 4H, Ph) **j k**; 6.196 -6.061 (m, 1H, = CH_2)**b**; 5.555-5.576 (m, 2H, = CH_2) **a**; 3.883-3.873(s, NH, 1H) **c**; 3.303-3.252 (m, 1H, NH) **d**; 3.234 (t, 8H, NCH_2) **m**; 3.206-3.066 (m, 4H, NCH_2) **l**; 2,747-2.711 (m, 4H, NCH_2) **p**; 1.181-1.059 (t, 12H, CH_3).

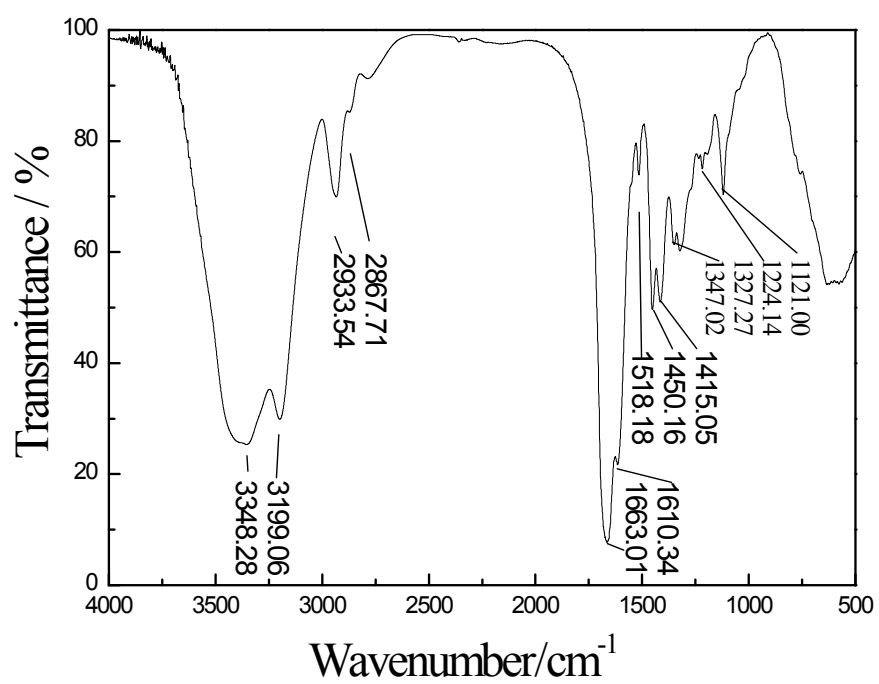


Fig. S4. FTIR spectrum of poly(AM-ARBD).

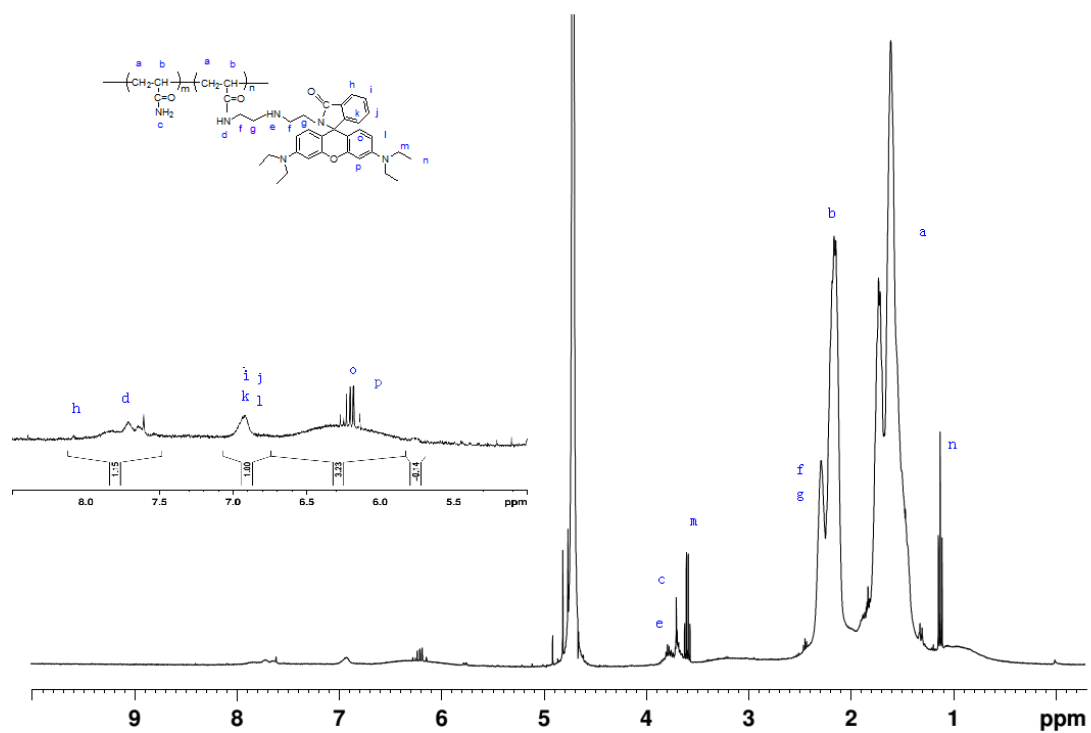
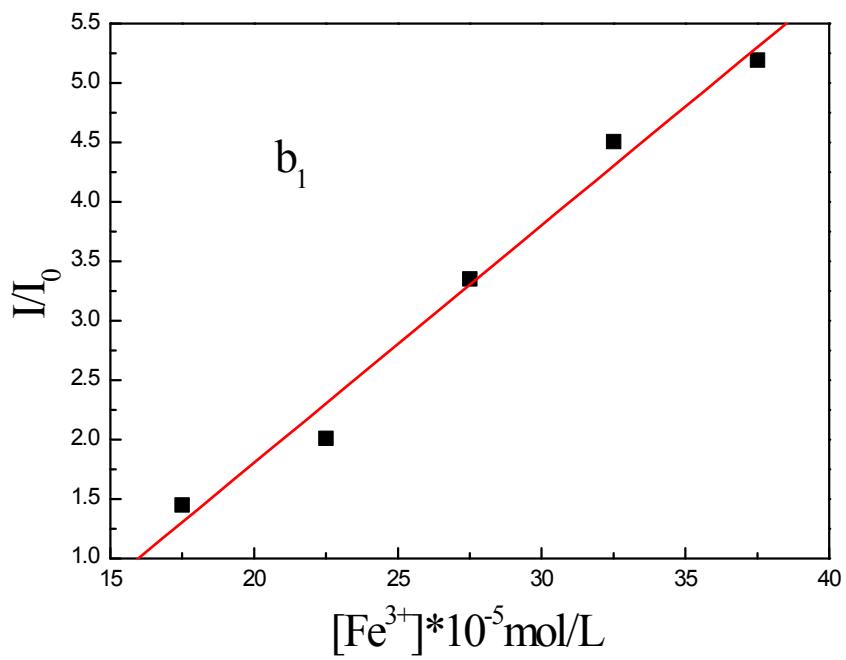
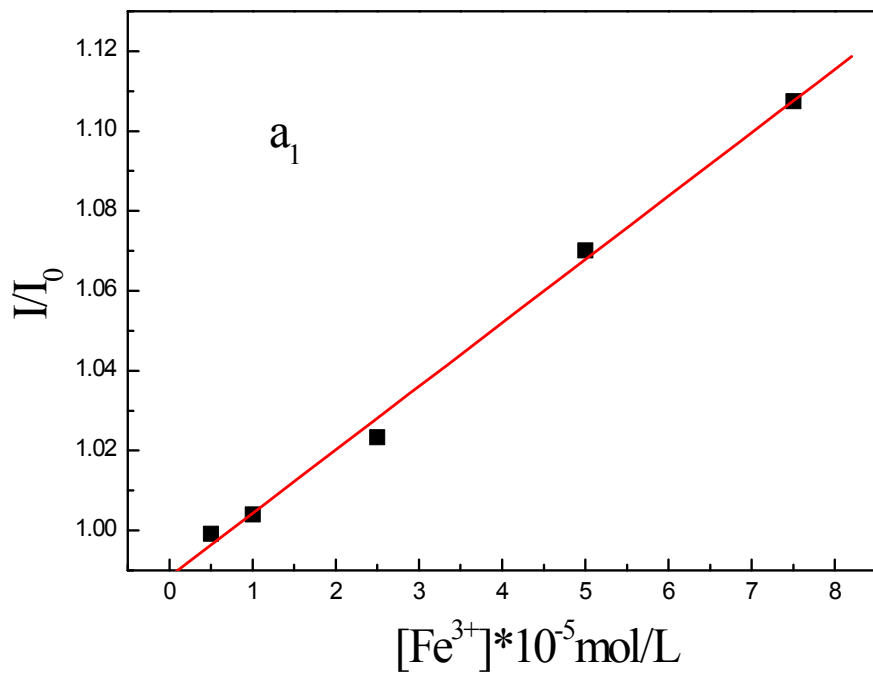


Fig. S5. ¹H NMR spectrum of poly(AM-ARBD).

¹H NMR (400 MHz, D₂O), δ: 0.944–0.979 (m, -CH₃) n, 1.031–1.893 (d, -CH₂-) a, 2.140–2.157 (m, -CH-) b, 2.406 (s, -CH₂-), 3.618–3.564 (d, -CH₂-NH-, -NH-) m, 3.691 (m, -CO-NH₂) c, 3.699 (d, -CH₂-NH-CH₂-) e, 6.142–6.532 (m, Φ-H) op, 7.079–7.172 (m, -Φ-H) ijkl, 7.539–7.818 (s, -CO-NH-) d, 7.870 (m, Φ-H) h.



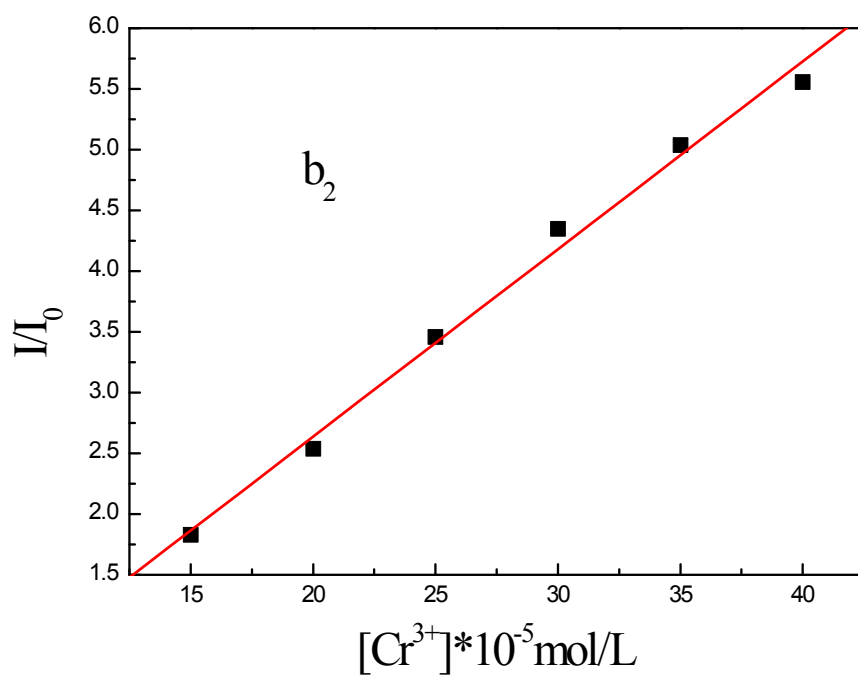
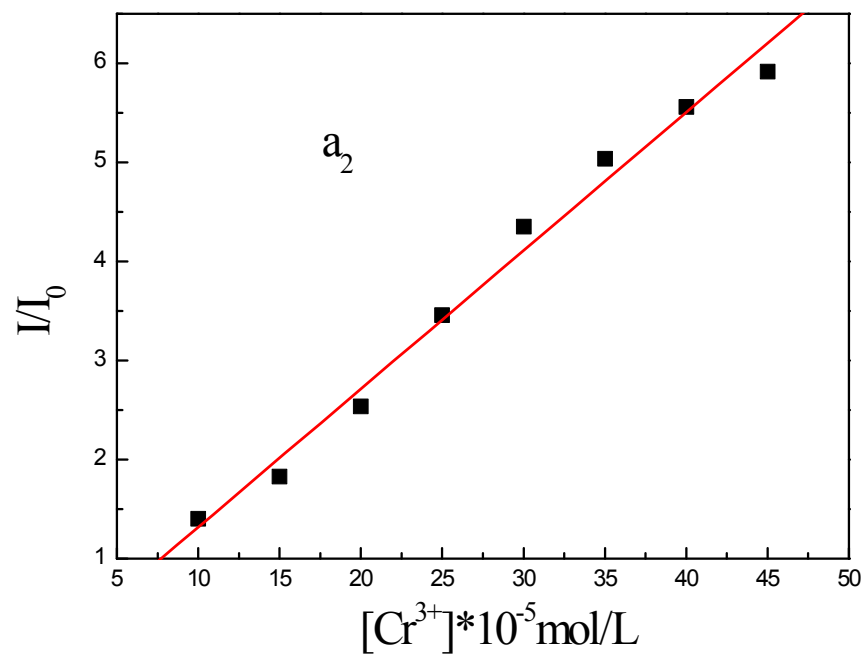


Fig. S 6. Linearized responses of poly(AM-ARBD) to Fe³⁺ (a₁-a₂) or Cr³⁺ (b₁-b₂) ions.