Supporting Information

1.[1] HNMR spectrum of HMPAM/α-CD

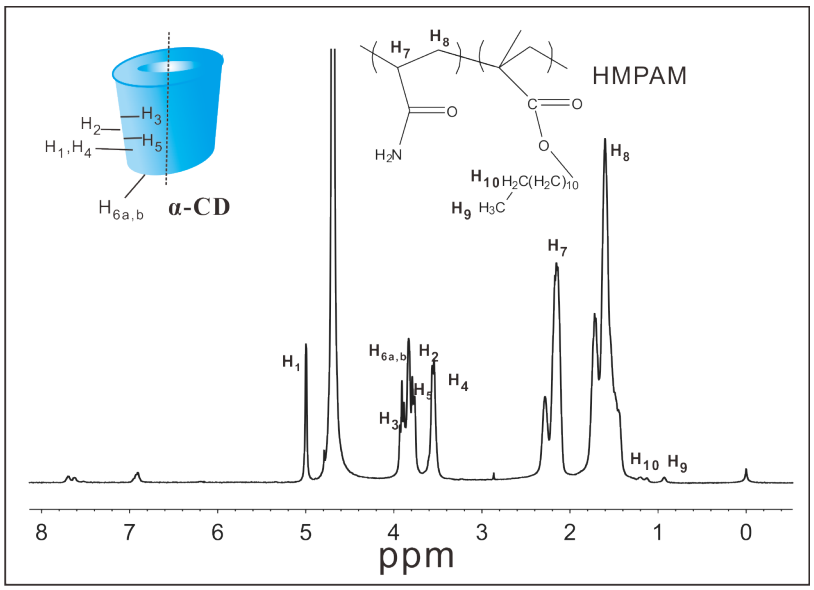

Figure S1 ^{1}H NMR spectra of 2.5wt%HMPAM /15mM α-CD in D_2O at T =25 ^{o}C.

2. Viscosity study of HMPAM/α-CD solution

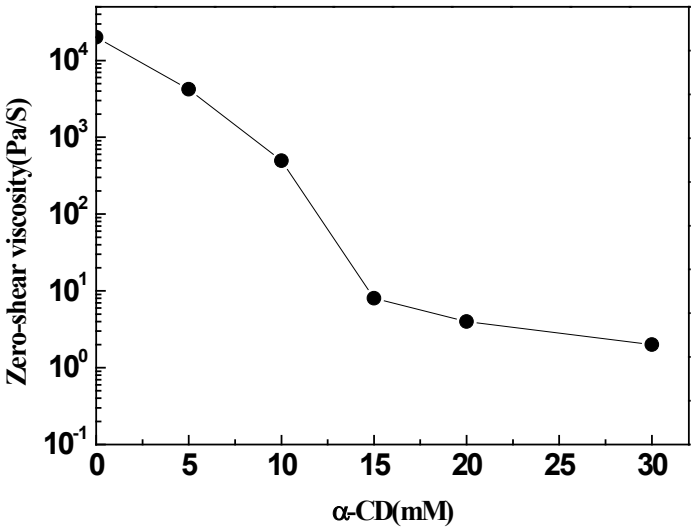

Figure S2. Zero-shear viscosity as a function of α-CD for mixtures of P(AM/C_{12}) and for mixtures of p(AM/C12) and α-CD under an applied stress of 1.0 Pa. Polymer concentration = 2.5wt%.

3. Fluorescence study of HMPAM/PAM

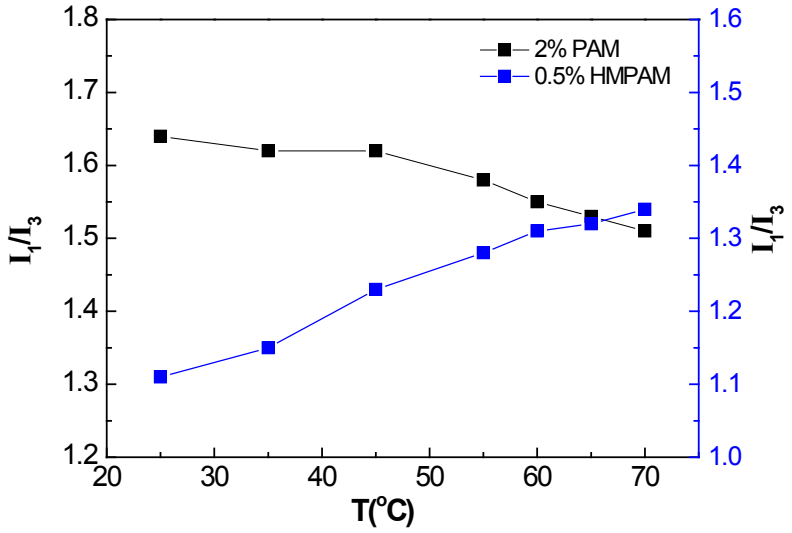

Figure S3 Variation of the ratio I_1/I_3 of aqueous solutions of 0.5wt% HMAPM and 2.0wt%PAM with temperature between 25°C and 70°C.

4. Rheology study of HMPAM/α-CD

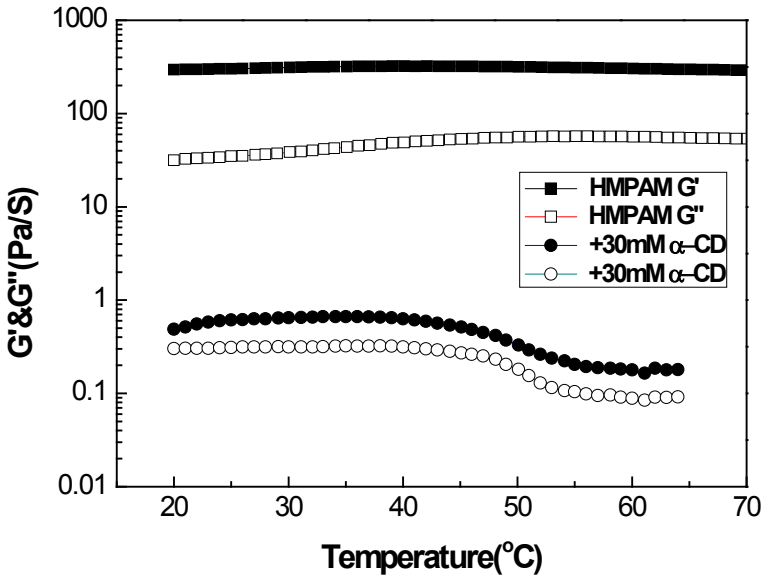

Figure S4 Storage modulus G' (filled circles) and loss modulus G''(empty circles) as a function of temperature for HMPAM/α-CD solution. A shear strain amplitude of 3% and an angular frequency of 1 rad/s were applied. The concentration of polymer is set as 2.5wt%.

5. The measurement of the association constants

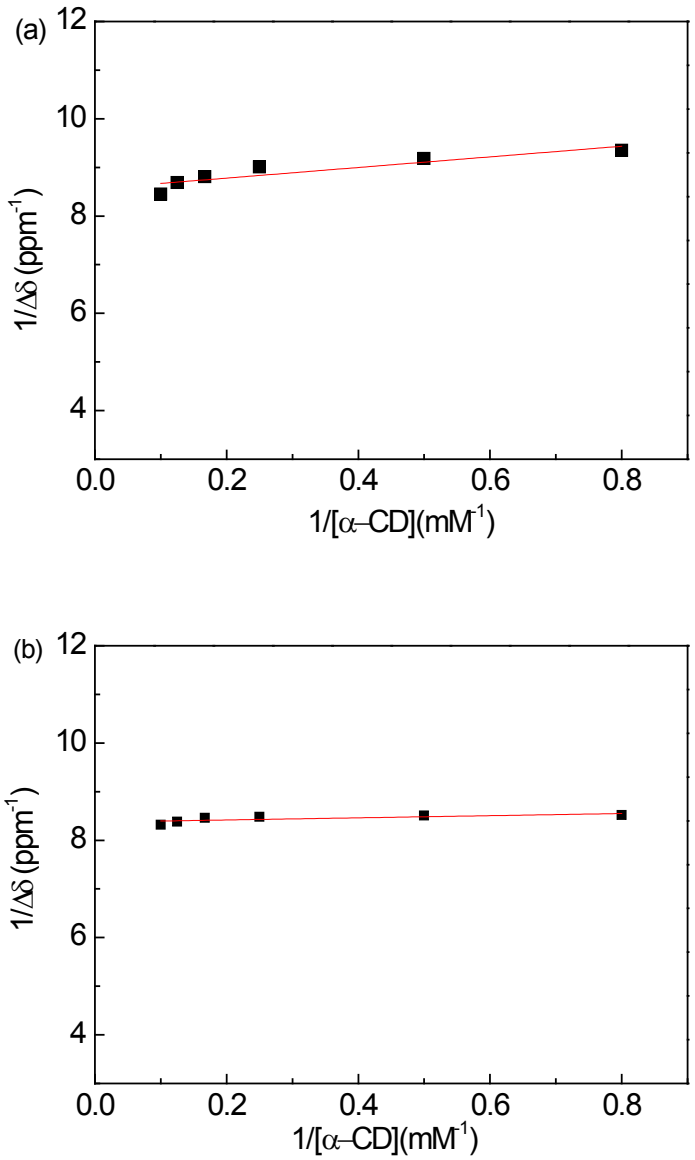

Figure S5 The Benesi-Hildebrand plots of the α-CD/HMPAM system at 25°C(a) and 70°C(b). error, within ± 10%.

According to the method previously reported[1-4], the determination of the association constants of the complex between the α-CD and the HMPAM were carried out by measuring the difference between the chemical shifts of the HMPAM alone and the same guest with increasing the concentration of α-CD. For the systems of 1:1 inclusion complex between guest and host, equilibrium constants (Kc) were estimated by a modification of the Benesi-Hildebrand equation, using eq 2:

$$\frac{1}{\Delta Hz} = \frac{1}{K_C} \bullet \frac{1}{[R]_0 \square \delta} \bullet \frac{1}{[\beta - CD]} + \frac{1}{[R]_0 \square \delta}$$

The association constant can be calculated from the slope of the straight line obtained by plotting 1/ΔHz vs 1/[α-CD].

1. Harada, A.; Adachi, H.; Kawaguchi, Y.; Kamachi, M., *Macromolecules* **1997,** 30, (17), 5181-5182.
2. Tomatsu, I.; Hashidzume, A.; Harada, A.,*Macromolecular Rapid Communications* **2005,** 26, (10), 825-829.
3. Taura, D.; Hashidzume, A.; Harada, A.,*Macromolecular Rapid Communications* **2007,** 28, (24), 2306-2310.
4. Hashidzume, A.; Harada, A., *Polymer Chemistry* **2011,** 2, (10), 2146-2154.