The hydrodynamic behaviors of amphiphilic dendritic polymers with different degrees of amidation

Cuiyun Zhang,[a] Cong Yu,*[b] Yuyuan Lu,*[c] Hongfei Li,*[c] Yu Chen,*[d] Hong Huo,*[e] Ian William Hamley*[f] and Shichun Jiang*[a]

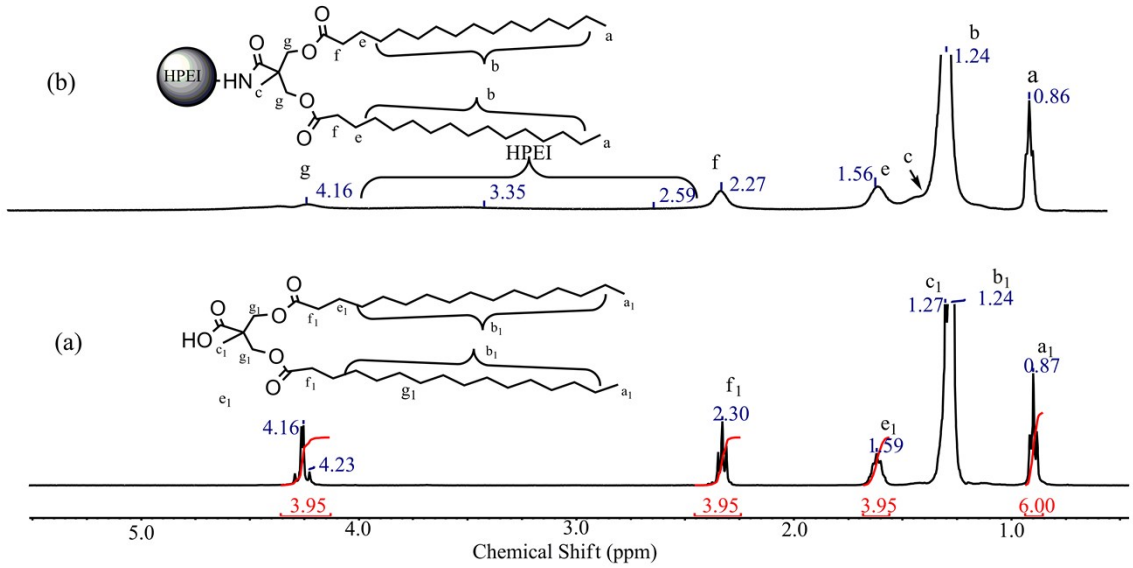

Fig. S1. ^{1}H NMR of (a) dendritical shell and (b) amphiphilic dendritic copolymer

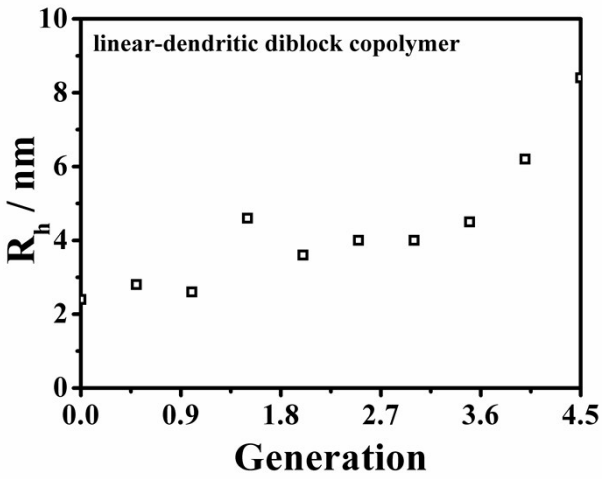

Fig. S2 The dependence of the hydrodynamic radius for linear-dendritic diblock copolymer on molecular weight.[1]

*Corresponding to: congyu@ciac.ac.cn; yylu@ciac.ac.cn; hfli@ciac.ac.cn; chenyu@tju.edu.cn; hhuo@bnu.edu.cn; i.w.hamley@reading.ac.uk; scjiang@tju.edu.cn

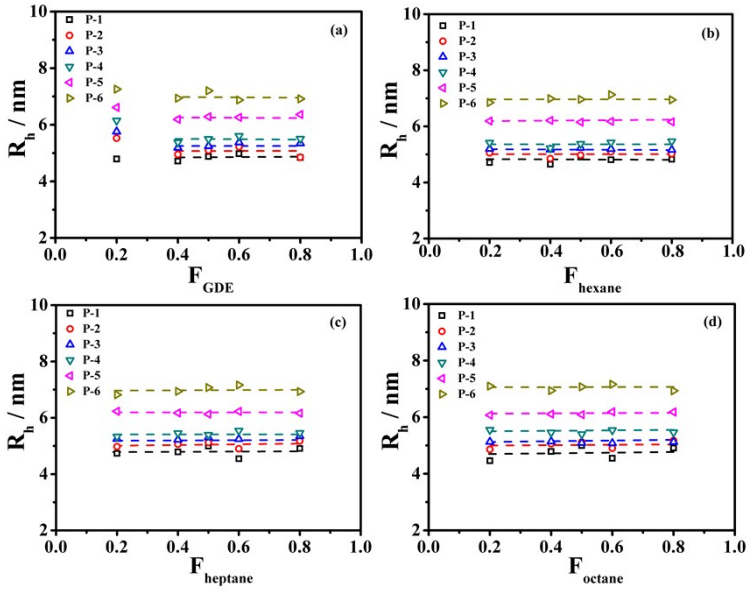

Fig. S3 Hydrodynamic radii of P-1, P-2, P-3, P-4, P-5, P-6 with increasing volume fraction of poor solvent for HPEI. ((a) glycol dimethyl ether, (b) hexane, (c) heptane, (d) octane.)

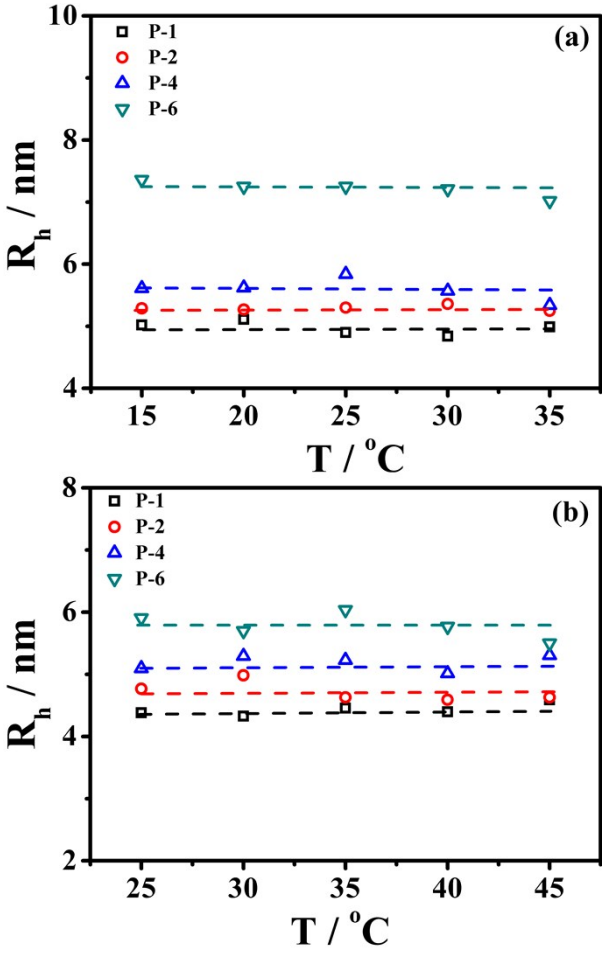

Fig. S4 Hydrodynamic radii of P-1, P-2, P-4, P-6 at different temperature. (a) chloroform, (b) glycol dimethyl ether.

Table S1. Hydrodynamic radii and radii of gyration from scattering and self-diffusion studies of Poly(amidoamine) (PAMAM) dendrimers containing an ethylenediamine core[3]

G	R_h/Å	R_g/Å	R_g/R_h
3	19.9	15.8	0.79
4	24.8	17.1	0.68
6	38.2	26.3	0.69
8	57.9	40.3	0.69
10	72.3	57.4	0.79

From the perspective of scaling relationship, PDI has an influence on the quantitative calculation. For the Mark-Houwink-Sakurada (MHS) equation ($[\eta] = KM^{\alpha}$), if the polydispersity index (PDI) is nearly the same for all the samples, the error will reside in the value found for K; if the PDI varies irregularly for different samples, no consistent relationship will be found between the molecular weight and intrinsic viscosity.[2] In this paper, the PDI of the samples in this paper is almost the same. R_h is an average value calculated from the Stokes-Einstein equation and R_g is an average value calculated from the Fox-Flory formula. Either the linearity of the decay rate and scattering vector or the specific viscosities and concentration is good. The diffusion coefficient and the intrinsic viscosity are reliable. On the other hand, as shown in Table S1, the ratio (ρ) of R_g and R_h for the poly(amidoamine) (PAMAM) is close to 0.77 indicating the compact structure of the dendrimers.[3] The variation of the ratio is small for the dendrimers at different generation (G) due to the hyperbranched and compact structure. The conformation difference between the ADPs is slight (similar with the dendrimers). So the influence of the PDI on ρ can be ignored. In summary, the average ratio of the R_g and R_h can reflect the conformation of the ADPs.

References

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2. P. J. Flory, *Principles of Polymer Chemistry*, Cornell University Press, 1953.

3. B. M. Tande, N. J. Wagner, *Macromolecules*, 2001, 34, 8580-8585.