Supplementary Material (ESI) for Soft Matter

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Supporting Information

Reversible Hydrogels from Amphiphilic Polyelectrolyte Model Multiblock Copolymers: The Importance of Macromolecular Topology

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Static Light Scattering (SLS)

SLS experiments were performed in order to determine the micellar characteristics of the copolymers. In Figure S1, the concentration dependence of the inverse scattering intensity extrapolated to zero angle $(Kc/\Delta I)_{\theta=0}$ (inset of Figure S1) is shown. The characteristics of the systems determined by SLS are summarized in Table S1. In Figure S2 it is presented the Zimm plot for the heptablock copolymer in acidic aqueous solutions of pH=6.

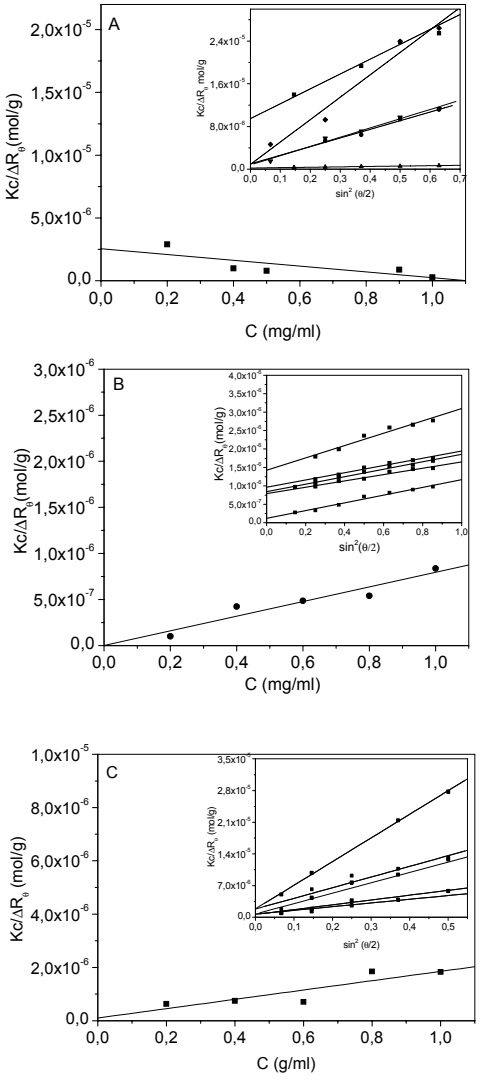

Figure S1. Inverse scattering intensity extrapolated to zero angle as a function of concentration of A) D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25} , B) B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5, C) D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25} in aqueous solutions of pH=6 . Inset: angle θ dependence of inverse scattering intensity for different concentrations.

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Table S1. Characteristics of copolymer aggregates determined by SLS in aqueous solutions at pH 6 .

No.	Polymer formula	M_w	N_{agg}
1	D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}	3,9 x 10^5	18
2	B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5	9,8 x 10^7	2880
3	D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}	8,6 x10^5	23

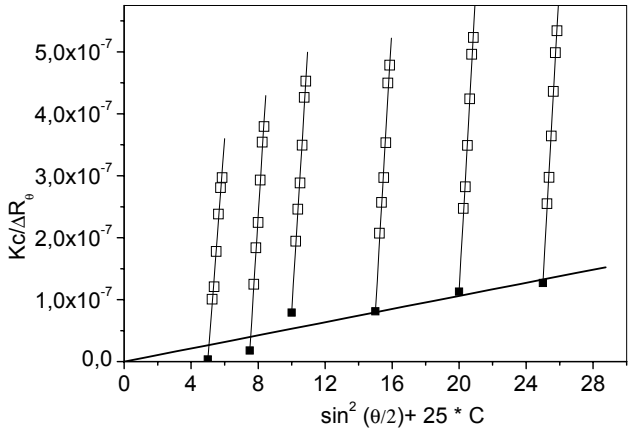

Figure S2. Zimm plot of B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5 in acidic aqueous solutions of pH=6 in the presence of 0,1 N NaCl. The apparent M_w was calculated 2.1 10^8 g/mol and the corresponding N_{agg}=6200.

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Dynamic Light Scattering

The q^2 dependence of the relaxation rate Γ in the low q limit is depicted in Figure S3. The translational diffusion coefficients were determined from the slope of the linear extrapolation, and the correspondent apparent hydrodynamic radius were calculated using Stokes-Einstein equation. The characteristics of the systems, as determined by DLS, are presented in Table S2.

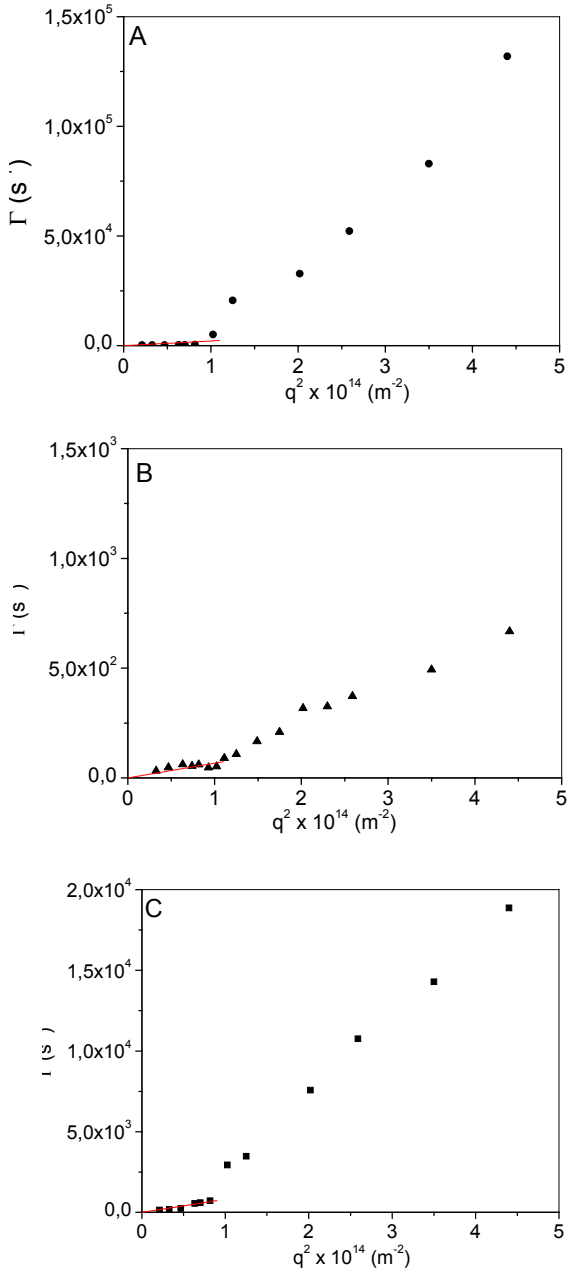

Figure S3. Characteristic q^2 dependence of relaxation rate Γ for a concentration $c=2x10^{-4}$ g/ml, pH=6, NaCl 0.1M of : A) pentablock; B) heptablock; C) nonablock. Solid red lines fit a linear dependence in the low q limit ($q \times R_H < 1$), where R_H is the hydrodynamic size of the diffusing particles.

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Table S2. Caracteristics of copolymers determined by DLS in aqueous solutions at pH 6.

No.	Polymer formula	D_T (m^2/s)	$R_{H,app}$ (nm)
1	D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}	$1{,}49 \times 10^{-11}$	16
2	B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5	$6{,}3 \times 10^{-13}$	388
3	D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}-*b*-B_5-*b*-D_{25}	$9{,}43 \times 10^{-12}$	25