Electronic supplementary information

Towards a structural characterization of charge-driven polymer micelles

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Table S1. Summary of light and neutron scattering results: micellar mass, M_w / kg mol^{-1}, aggregation number given as the number of anionic, P_{agg}^{-}, and cationic, P_{agg}^{+} polymers per micelle, radius of gyration extrapolated to zero angle, R_g^0 / nm, radius of hydration

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extrapolated to zero angle, R_h^0 / nm, radius of gyration (Guinier extrapolation), R_{gu} / nm, average core radius[c] (model fitting), $\langle R \rangle$ / nm, average shell radius, R_s / nm, core polydispersity (model fitting), p_{real}, and the ratio of the radii of gyration and hydration, R_g / R_h^0 and R_{gu} / R_h^0. M_w and R_g^0 (SLS) are averages of Guinier and Zimm extrapolations (difference between extrapolations was ≤ 1 and 8%, respectively). A shortened version including only the most reliable values can be found in the main body of the text (Table 3).

Polymers (M_w)	*SLS*					*SANS*				
	P_{agg}^-	P_{agg}^+	R_g^0	R_h^0	R_g/R_h^0	R_{gu}	$\langle R \rangle$	R_s	p_{real}	R_{gu}/R_h^0
PAA_{39}-*b*-$PAAm_{97}$ + $P2MVP_{43}$ (295)	20.3	18.4	14.8	11.5	1.29	-	8.3	3.2	0.15	-
PAA_{44}-*b*-$PAAm_{150}$+ $P2MVP_{43}$ (580)	29.9	30.6	13.9	15.8	0.88	7.4	11.2	4.6	0.17	0.47
PAA_{39}-*b*-$PAAm_{191}$+ $P2MVP_{43}$ (353)	16.5	14.9	18.0	14.1	1.28	-	10.8	3.3	0.26	-
PAA_{44}-*b*-$PAAm_{300}$+ $P2MVP_{43}$ (653)	21.5	22.0	15.0	19.5	0.77	9.4	12.5	7.0	0.25	0.48
PAA_{39}-*b*-$PAAm_{381}$+ $P2MVP_{43}$ (432)	12.2	11.1	12.2	19.3	0.63	9.3	11.5	7.8	0.27	0.48
PAA_{44}-*b*-$PAAm_{610}$+ $P2MVP_{43}$ (667)	12.6	12.9	14.3	26.1	0.55	12.8	14.5	11.6	0.28	0.49
$P2MVP_{41}$-*b*-PEO_{95} + PAA_{51}-*b*-PEO_{250} (832)	32.0	39.8	28.6	19.4	1.47	10.4	12.0	7.4	0.17	0.54
$P2VMP_{38}$-*b*-PEO_{211} + PAA_{51}-*b*-PEO_{250} (253)	7.6	10.2	19.2	13.7	1.40	8.1	11.5	2.2	0.24	0.59
$P2VMP_{42}$-*b*-PEO_{446} + PAA_{51}-*b*-PEO_{250} (250)	5.6	6.8	22.1	16.3	1.36	9.9	13.1	3.2	0.27	0.61
$P2VMP_{71}$-*b*-PEO_{454} + PAA_{51}-*b*-PEO_{250} (517)	14.7	10.6	16.3	19.8	0.82	-	-	-	-	-
PAA_{39}-*b*-$PAAm_{97}$ + $PDMAEMA_{150}$ (71)	4.4	1.1	26.9	6.1	4.41	-	-	-	-	-
PAA_{44}-*b*-$PAAm_{150}$ + $PDMAEMA_{150}$ (62)	2.9	0.9	28.7	6.2	4.64	-	-	-	-	-
PAA_{39}-*b*-$PAAm_{191}$ + $PDMAEMA_{150}$ (124)	5.4	1.4	33.0	9.1	3.62	5.7	-	-	-	0.63
PAA_{44}-*b*-$PAAm_{300}$ + $PDMAEMA_{150}$ (73)	2.3	0.7	19.5	8.0	2.44	4.3	-	-	-	0.54

PAA_{39}-*b*-$PAAm_{381}$ + $PDMAEMA_{150}$ (122)	3.3	0.9	26.4	10.5	2.51	6.5	-	-	-	0.62
PAA_{44}-*b*-$PAAm_{610}$ + $PDMAEMA_{150}$ (121)	2.2	0.6	22.6	12.1	1.87	7.3	-	-	-	0.60

Small angle neutron scattering

As the *q*-range for the experiments on S-C3Ms of PAA-*b*-PAAm and $PDMAEMA_{150}$ was too limited to obtain reliable values from model fitting, no model fitting results are given for this system. The small angle scattering curves are shown in Figure S1.

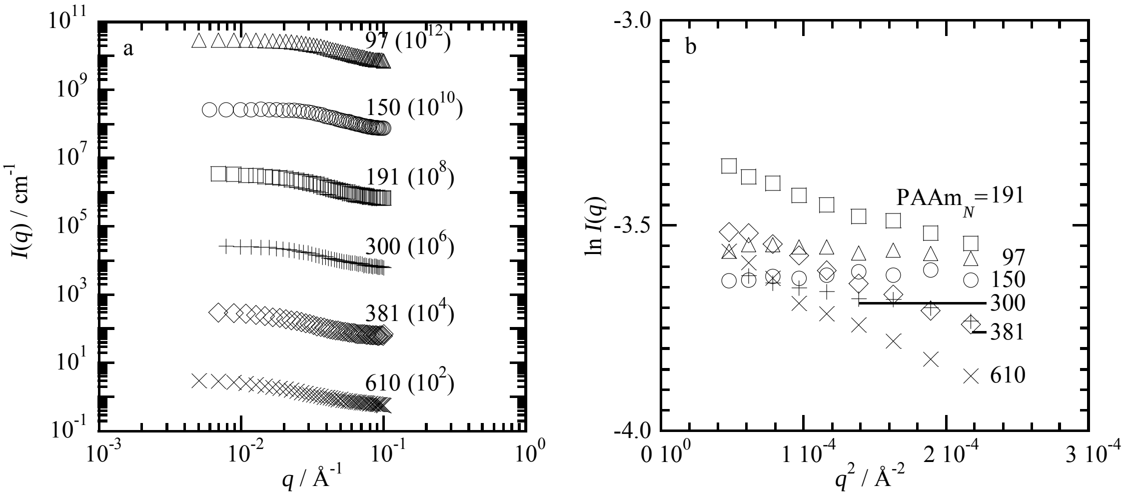

Figure S1. (a) Scattering curves, $I(q)$ / cm^{-1} versus q / Å^{-1} and (b) Guinier representations (used *q*-range is $0.007 < q < 0.15$ Å^{-1}), ln $I(q)$ versus q^2 / Å^{-2} for C3Ms of $PDMAEMA_{150}$ and (Δ) PAA_{39}-*b*-$PAAm_{97}$, (○) PAA_{44}-*b*-$PAAm_{150}$, (□) PAA_{39}-*b*-$PAAm_{191}$, (+) PAA_{44}-*b*-$PAAm_{300}$, (◊) PAA_{39}-*b*-$PAAm_{381}$, (×) PAA_{44}-*b*-$PAAm_{610}$ ($f_+ = 0.50$, C = 5.1-5.3 g l^{-1}, T = 25 °C). The scattering curves include incoherent scattering due to solvent and hydrogenated polymer segments. Data points ≤ 0.007 Å^{-1} were discarded due to lack statistics and/or upturns resulting from a small fraction of aggregates.

Scaling properties

In the main body of the text, we have listed (plotted) only the most reliable data in Table 3 (Figure 5). For the sake of completeness, we provide all experimentally obtained values in Table S1 and Figure S2.

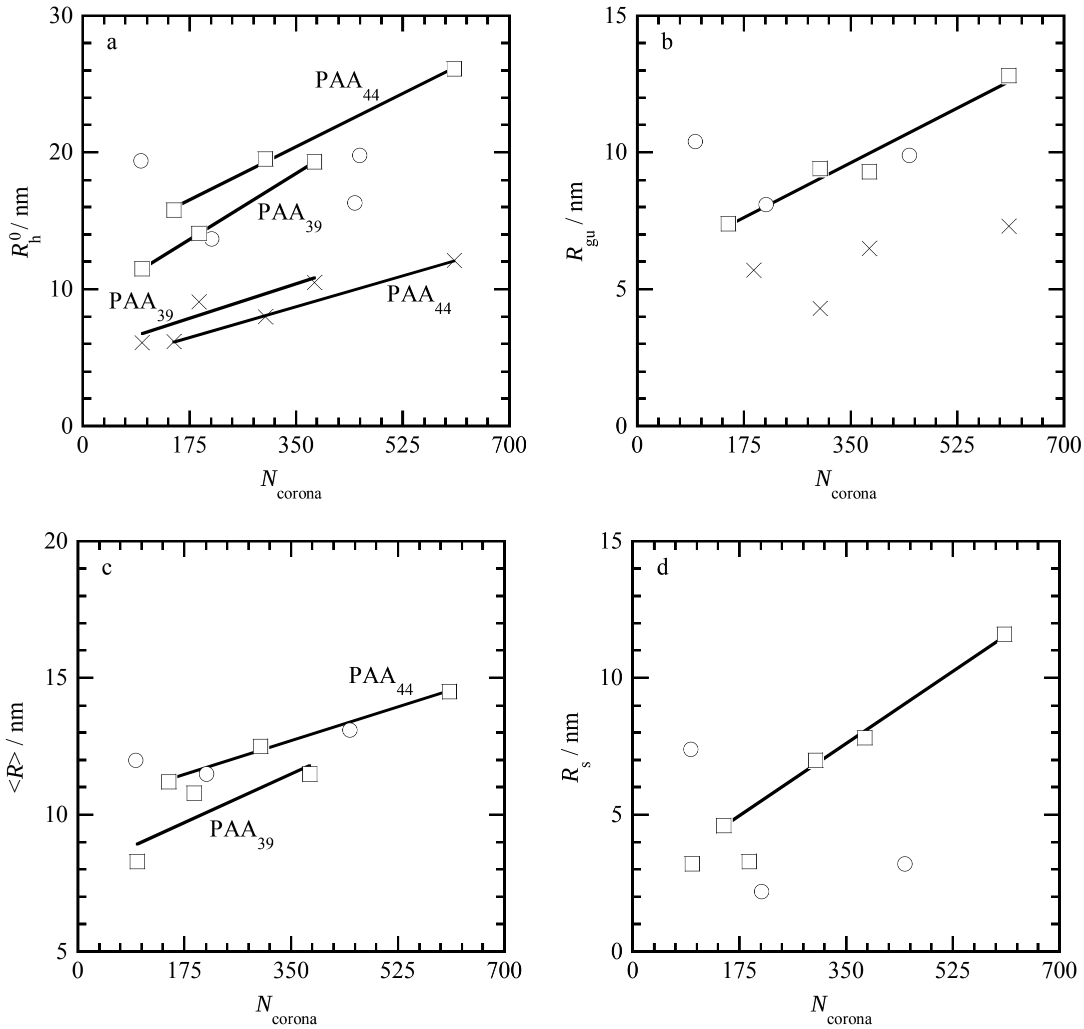

Figure S2. (a) R_h^0, (b) R_{gu}, (c) $\langle R \rangle$, and (d) R_s as a function of N_{corona} for C3Ms of (○)

PAA_{51}-*b*-PEO_{250} and P2MVP-*b*-PEO, (□) $P2MVP_{43}$ and PAA-*b*-PAAm, and (×) $PDMAEMA_{150}$ and PAA-*b*-PAAm. Lines represent linear scaling consistent with the experimental data.