Supporting information

Acetylcholinesterase Responsive Polymeric Supra-Amphiphiles for Controlled Self-assembly and Disassembly

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1. Zeta-potential of spherical aggregates with various charge ratios.

Zeta-potential variation of spherical aggregates matches well with the charge ratio (the charge ratio of MCC and block copolymers is defined as R) change of MCC/PEG-b-PAA. Zeta-potential of both MCC/PEG_{114}-b-PAA_{46} and MCC/PEG_{114}-b-PAA_{93} increases from ~-9.5 mV to ~+2.5 mV when R changes from 0.10 to 1.33, those of R=1.00 are close to 0 mV (Figure S1). It is reasonable that spherical aggregates are negatively charged when positively charged MCC is insufficient, while it becomes positive when MCC is sufficient.

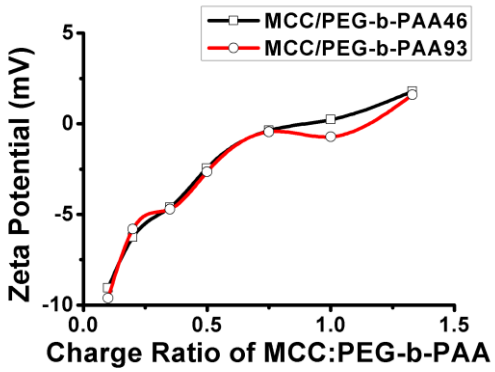

Figure S1. Zeta-potential of spherical aggregates with various charge ratios.

2. Count rate comparison of MCC/PEG_{114}-b-PAA_{46} and MCC/PEG_{114}-b-PAA_{93}.

As shown in Figure S2, when R≥0.50, MCC/PEG_{114}-b-PAA_{93} aggregates own more count rate than MCC/PEG_{114}-b-PAA_{46}, which means more spherical aggregates are formed.

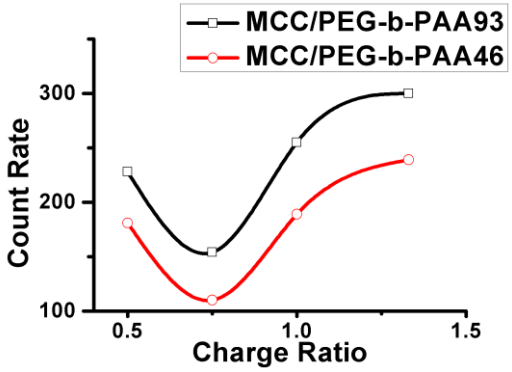

Figure S2. Count rate comparison of MCC/PEG_{114}-b-PAA_{46} and MCC/PEG_{114}-b-PAA_{93}.

3. Zeta-size of MCC/PEG_{114}-b-PAA_{46} at R=1.33.

Aggregate size of MCC/PEG_{114}-b-PAA_{46} at R=1.33 is extremely larger than others (Figure S3), while that of MCC/PEG_{114}-b-PAA_{93} is among regular size. There might be some entanglement or condensation between MCC/PEG_{114}-b-PAA_{46} spherical aggregates.

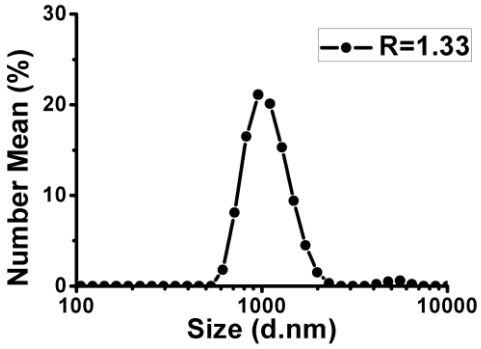

Figure S3. Zeta-size of MCC/PEG_{114}-b-PAA_{46} at R=1.33.

4. Zeta-size of MCC/PEG_{114}-b-PAA_{46} upon 5 U/mL deactivated AChE treatment.

For control experiment, deactivated AChE was used to treat MCC/PEG_{114}-b-PAA_{46}. As shown in Figure S4, almost no change in zeta-size is found, which indicates that activated AChE should be responsible for the spherical aggregates' disaggregation.

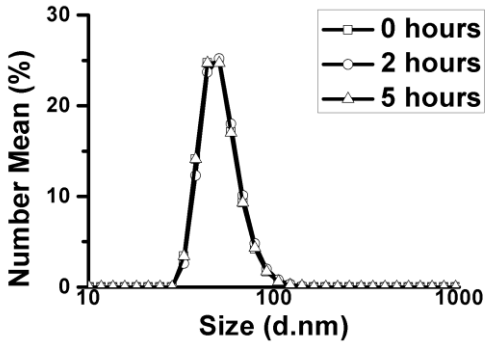

Figure S4. Zeta-size of MCC/PEG_{114}-b-PAA_{46} upon 5 U/mL deactivated AChE treatment.

5. Color changing of MCC/PEG-b-PAA/NR complexes before and after AChE treatment.

Figure S5. Color changing of MCC/PEG-b-PAA/NR complexes before and after AChE treatment.