Electronic Supplementary Information (ESI)

Vesicle formation of single-tail amphiphilic alkyltrimethylammonium bromides in water induced by dehydration-rehydration

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The ESI contains 12 figures.

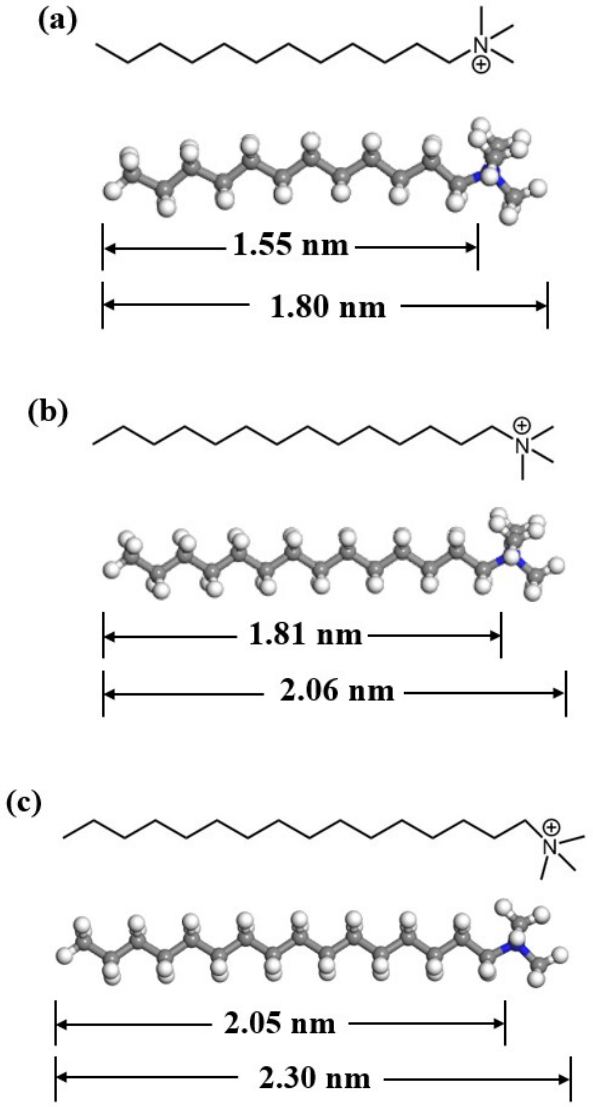

Fig. S1 Chemical structures of (a) DTAB, (b) TTAB, and (c) CTAB. The energy-minimized structure of C_nTAB was obtained via the density functional theory by Materials Studios 2018. The atom coloring schemes are C gray, H white; and N blue.

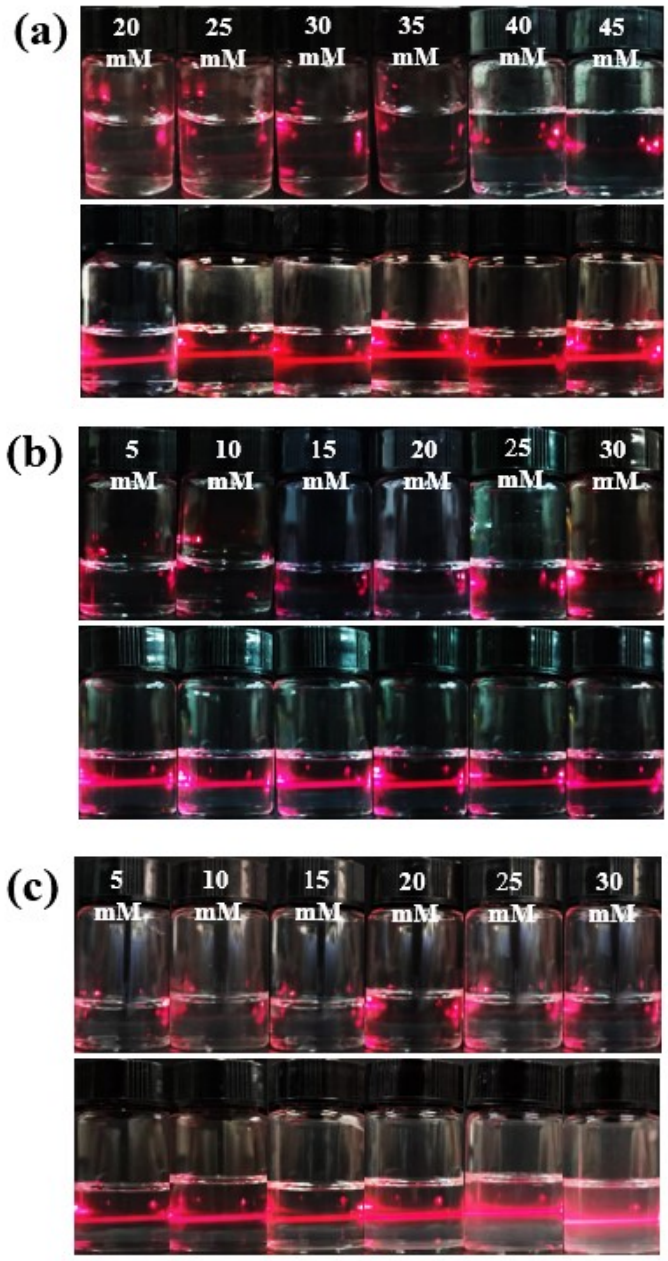

Fig. S2 Appearance photos of micelle (up) and vesicle (down) solutions of (a) DTAB, (b) TTAB, and (c) CTAB at different concentrations.

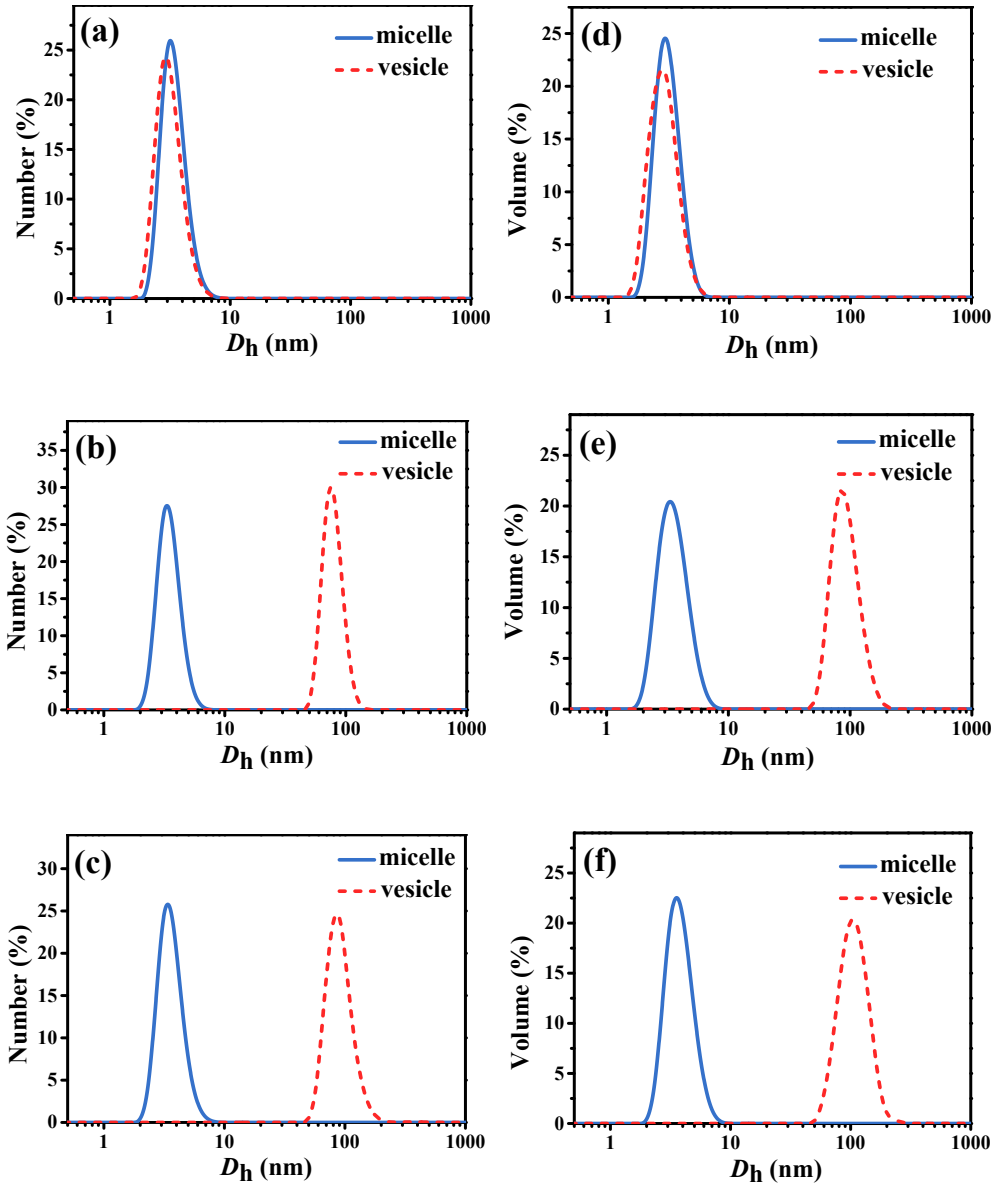

Fig. S3 (a–c) Number-weighted and (d–f) volume-weighted size distribution plots of 20 mM micelle- and vesicle-solutions of (a, d) DTAB, (b, e) TTAB, and (c, f) CTAB.

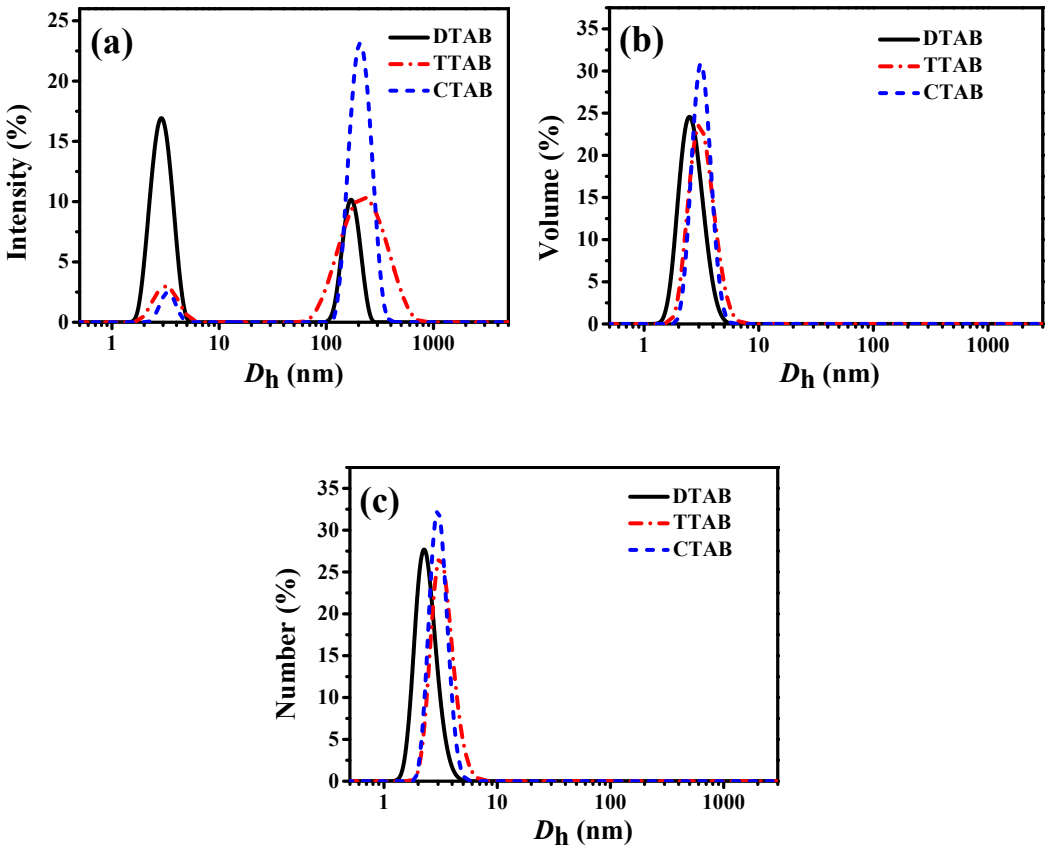

Fig. S4 (a) Intensity-weighted, (b) volume-weighted, and (c) number-weighted size distribution plots of 20 mM C_nTAB vesicle-solutions obtained by RGSs *in situ* mediation for 24 h.

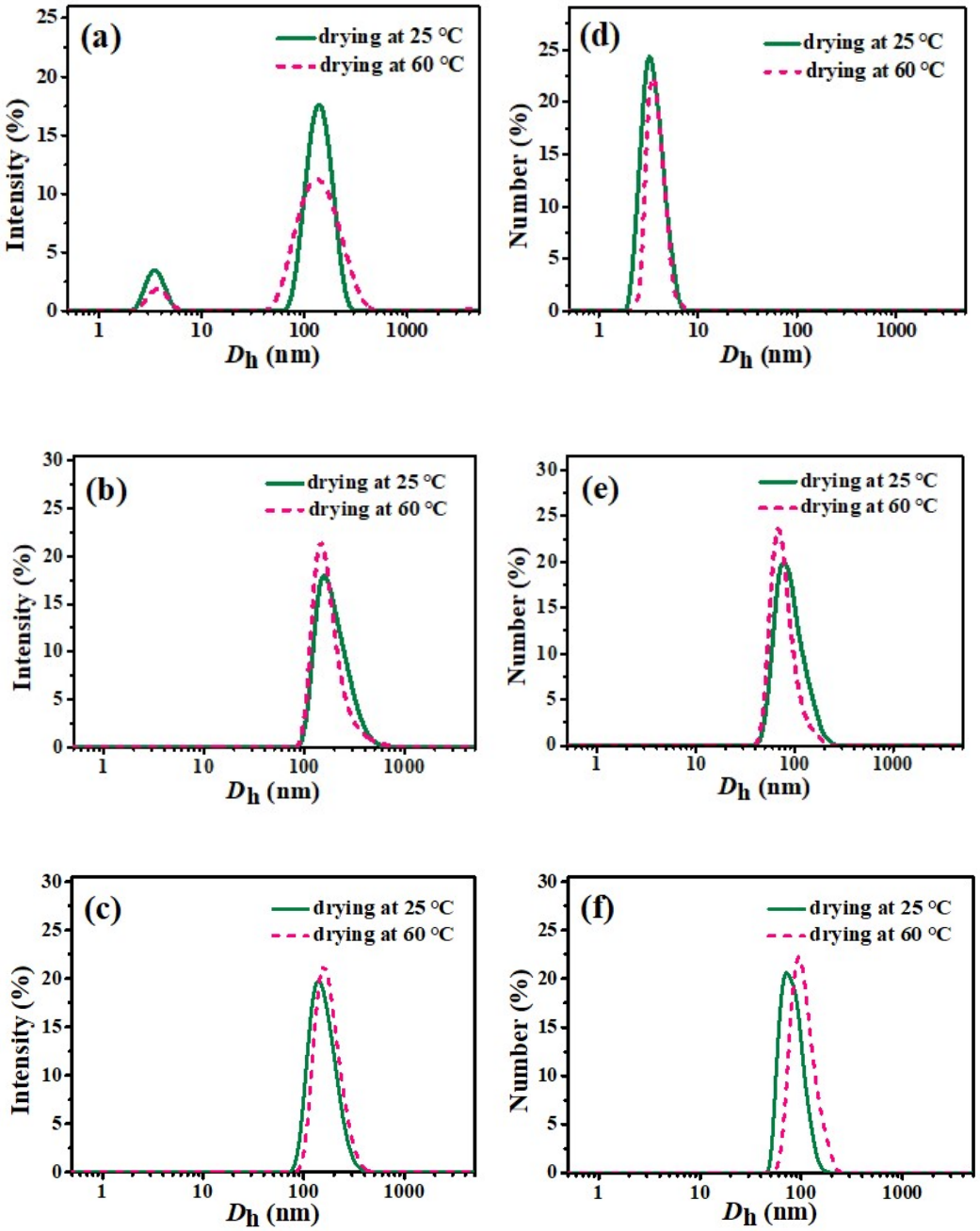

Fig. S5 (a–c) Intensity-weighted and (d–f) number-weighted size distribution plots of (a, d) DTAB, (b, e) TTAB, and (c, f) CTAB vesicle-solutions (20 mM) obtained by 25 and 60 °C drying.

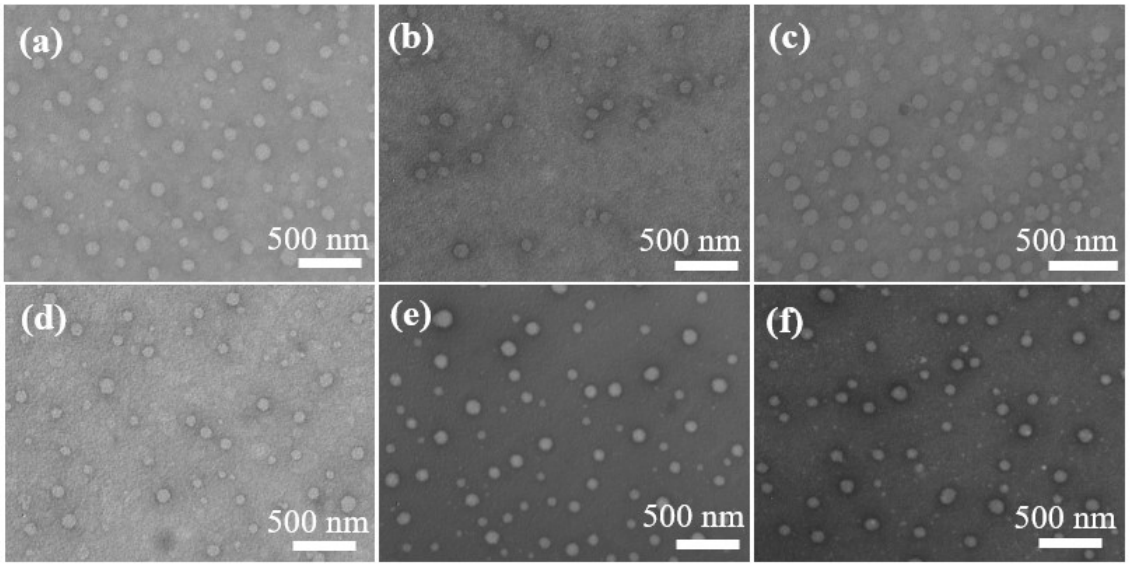

Fig. S6 NS-TEM images of (a, d) DTAB, (b, e) TTAB, and (c, f) CTAB vesicle-solutions obtained at drying temperatures of (a–c) 25 and (d–f) 60 °C.

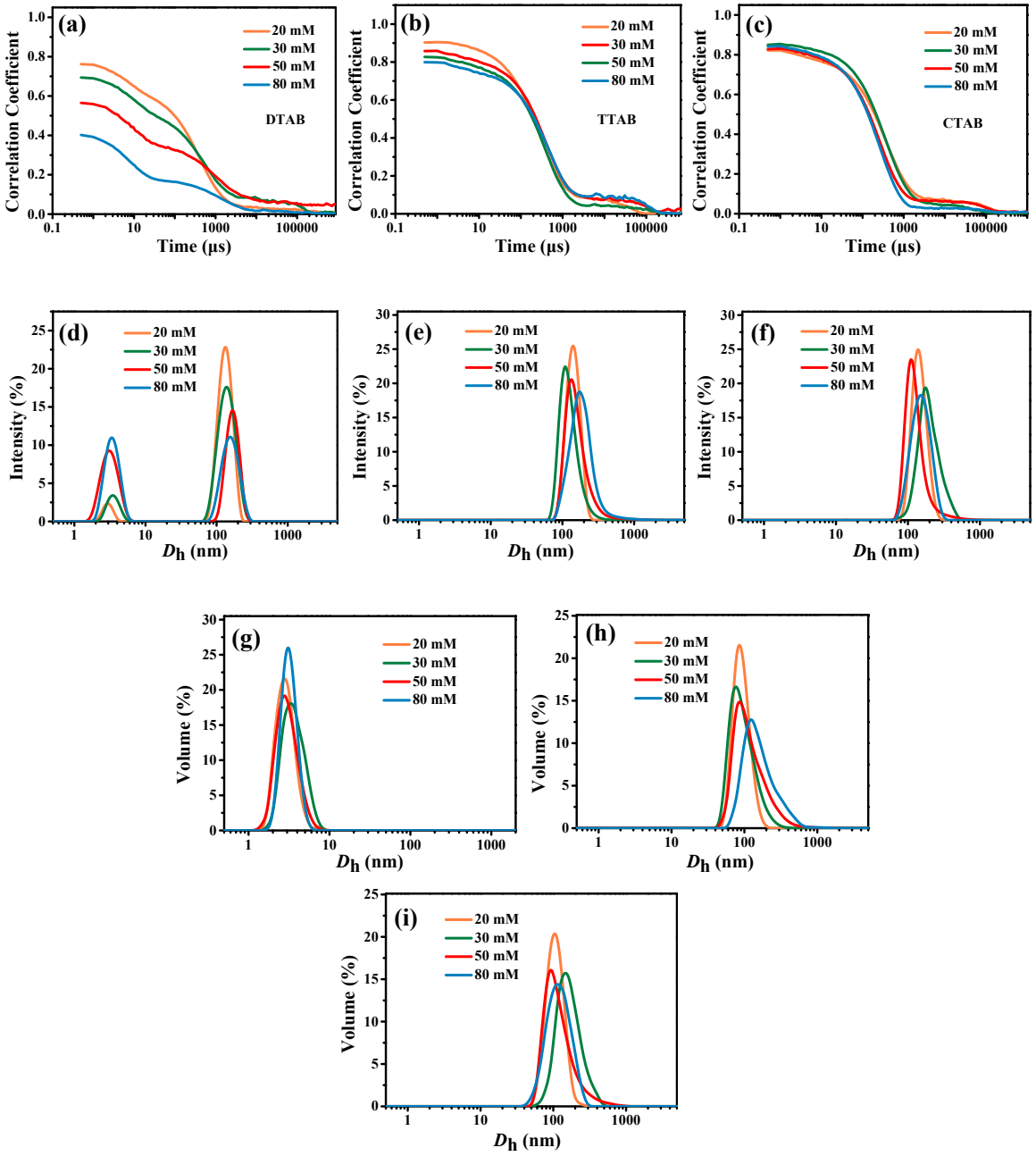

Fig. S7 (a–c) Correlation coefficient and (d–f) intensity-weighted and (g–i) volume-weighted size distribution plots of (a, d, g) DTAB, (b, e, h) TTAB, and (c, f, i) CTAB vesicle-solutions with different C_{ms}.

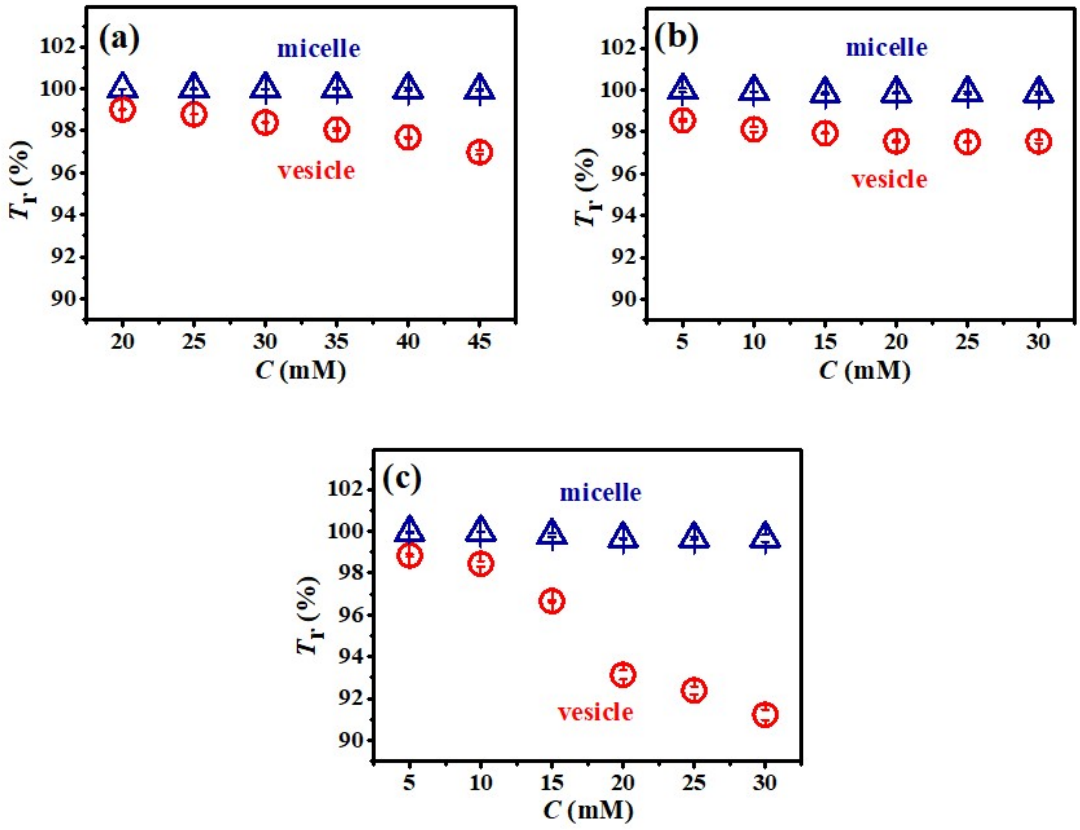

Fig. S8 Transmittances of (a) DTAB, (b) TTAB, and (c) CTAB micelle and vesicle solutions at different C_{vs}.

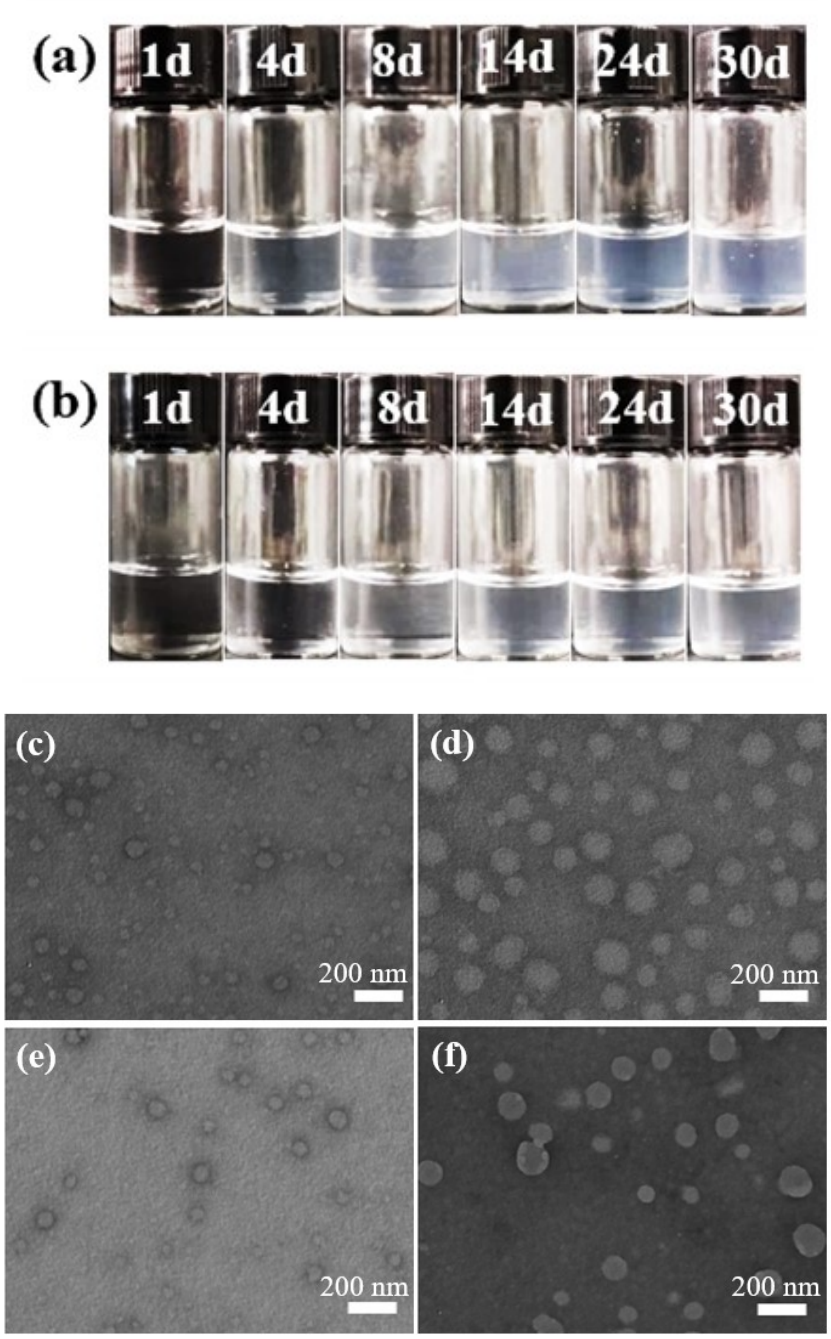

Fig. S9 Appearance photos of TTAB vesicle-solutions with (a) 5 mM and (b) 10 mM at different standing times at 25.0 ℃. NS-TEM images of (c, d) 5 mM TTAB and (e, f) 10 mM TTAB vesicle-solutions after standing for (c, e) 1 d and (d, f) 14 d.

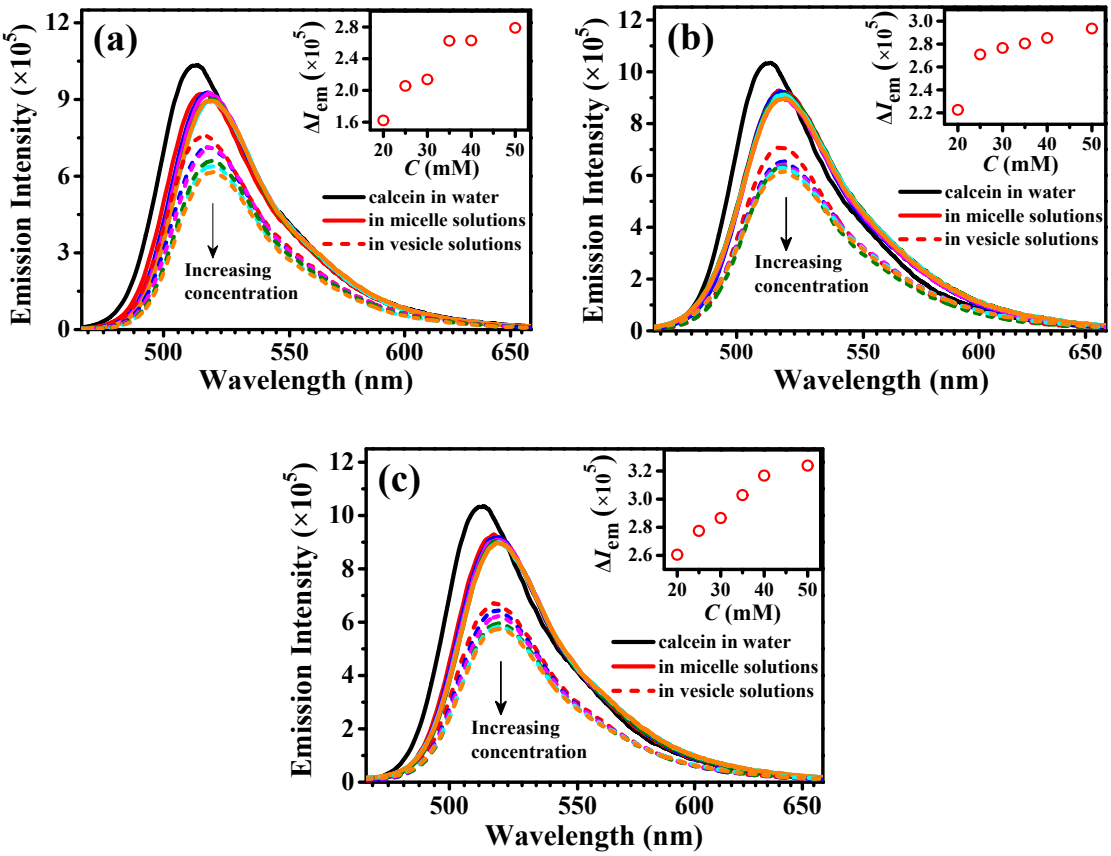

Fig. S10 Emission spectra of calcein-marked (a) DTAB, (b) TTAB, and (c) CTAB micelle and vesicle solutions with different concentration at 25 ℃. Insets in (a), (b) and (c) present the change of ΔI_{em} with C_nTAB concentration (C).

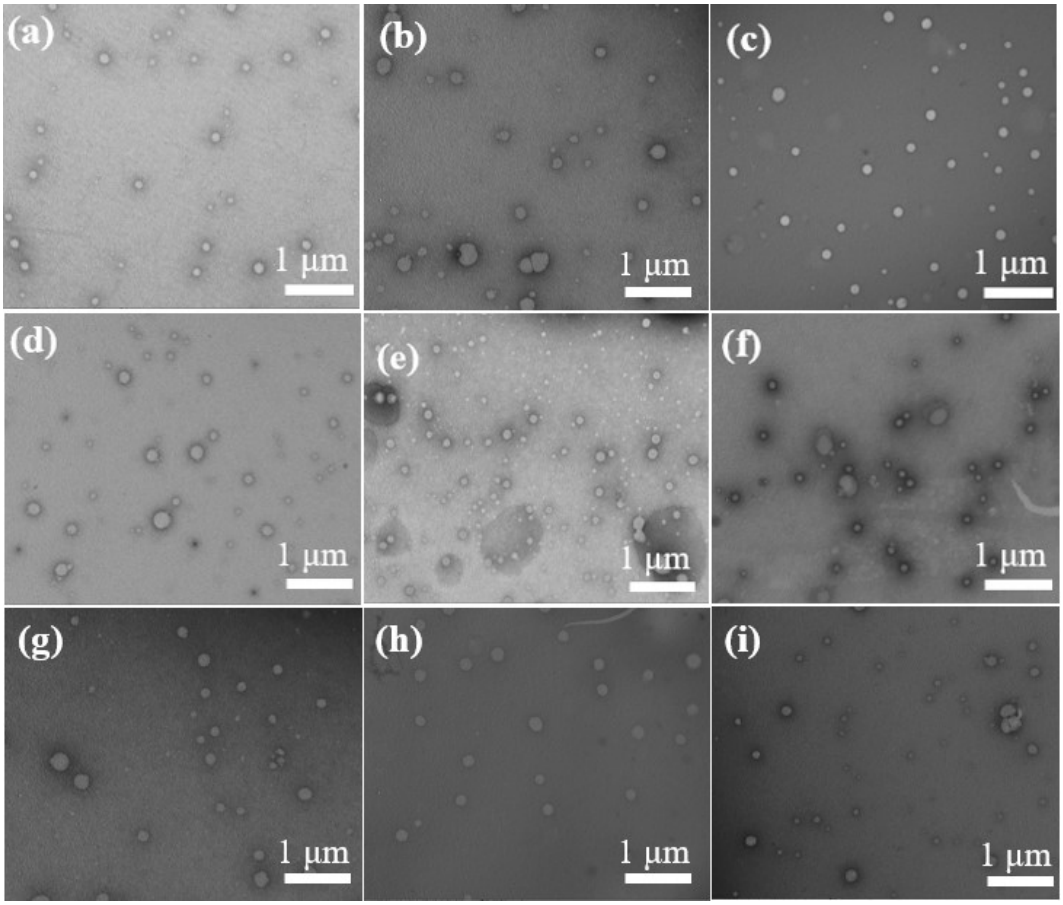

Fig. S11 NS-TEM images of 20 mM vesicle solutions of (a, d, e) DTAB, (b, e, h) TTAB, and (c, f, i) CTAB after (a–c) storage at room temperature for six months, (d–f) exposure to 80 °C for 2 h, and (g-i) freeze (–20 °C for 2 h)-thawing (25.0 °C) cycle.

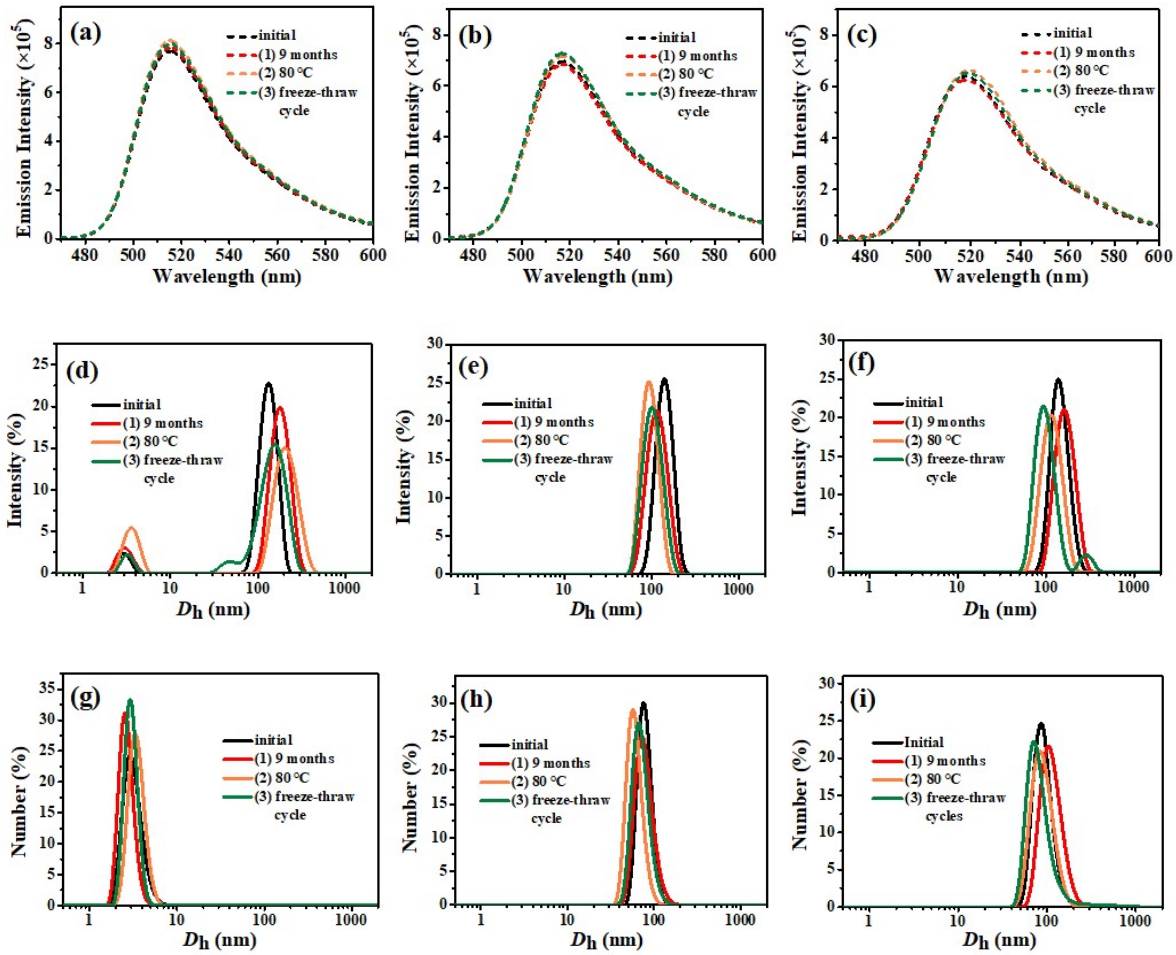

Fig. S12 (a–c) Calcein emission spectra, (d–f) intensity-weighted and (g–i) number-weighted size distributions of (a, d, g) DTAB, (b, e, h) TTAB, and (c, f, i) CTAB vesicle-solutions (20 mM) after (1) storage at room temperature for nine months, (2) exposure to 80 °C for 2 h, and (3) freeze (–20 °C for 2 h)-thawing (25.0 °C) cycle.