

Supplementary Information

Effect of Phase Transition Temperature of Liposomes on Preparation of Fullerene-Encapsulated Liposomes by the Fullerene-Exchange Reaction

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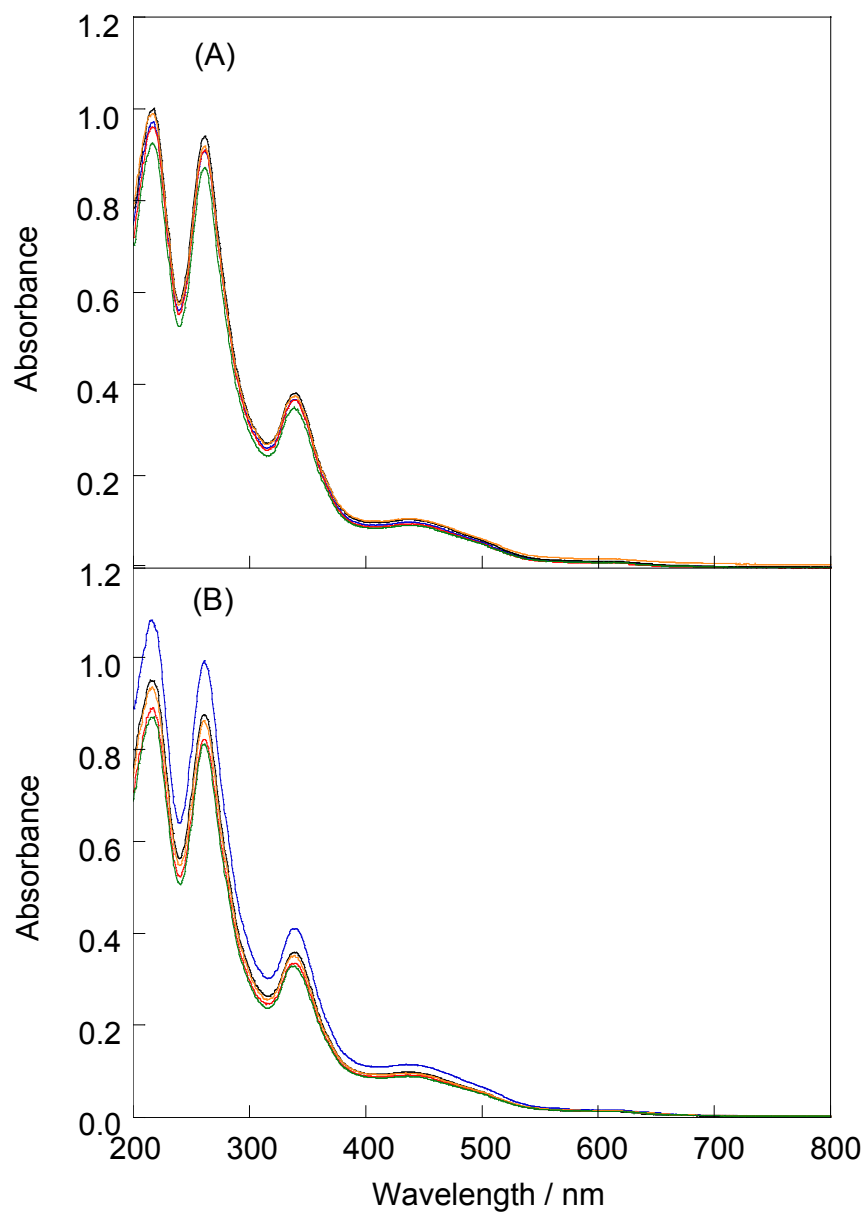


Fig. S1 UV-vis absorption spectra of LMIC₆₀ in (A) DMPC- and (B) DPPC-liposomes after the incubation times of 0 (blue line), 1 (black line), 24 (red line), 48 (orange line) and 72 h (yellow line).

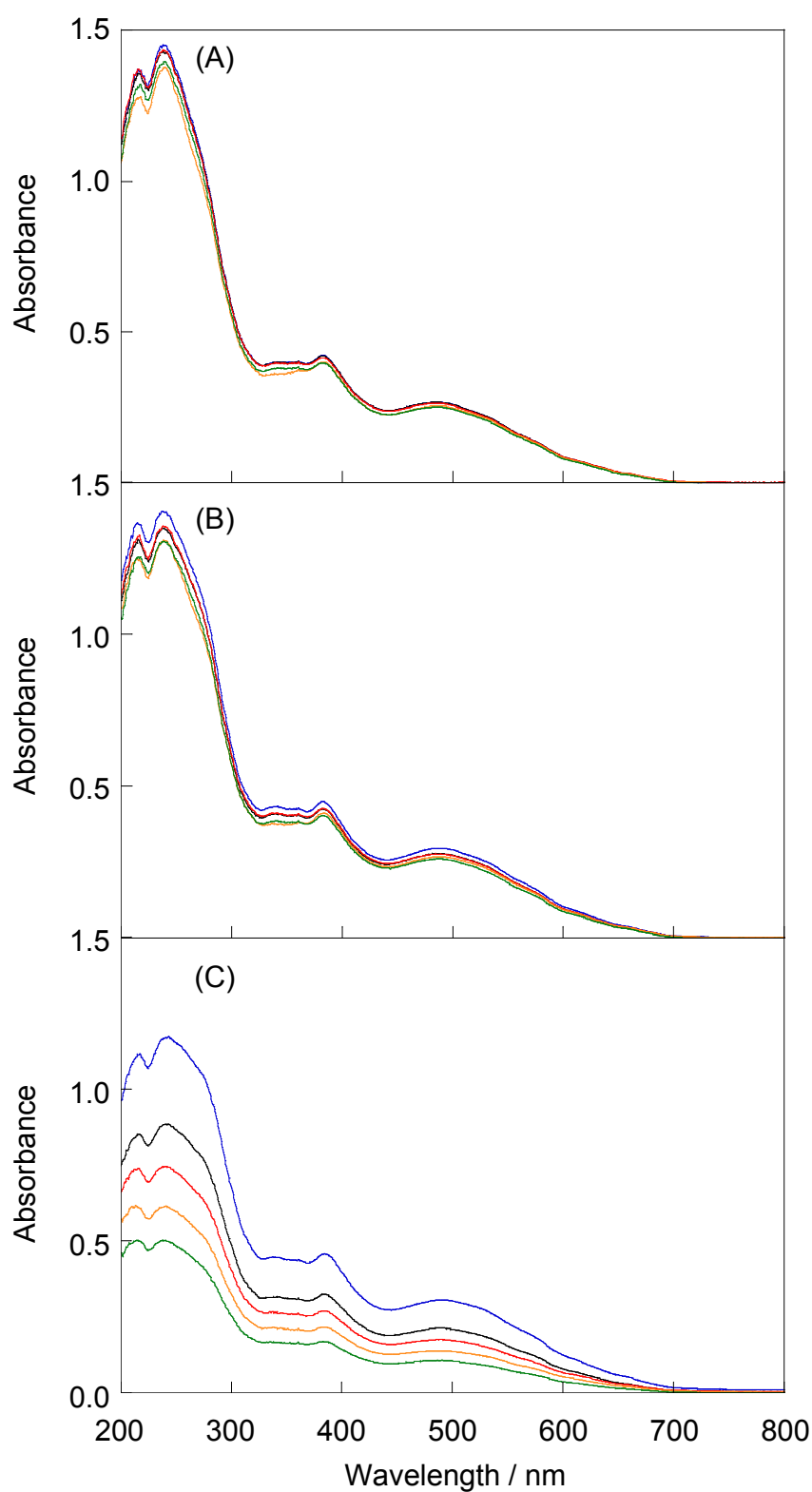


Fig. S2 UV-vis absorption spectra of LMIC₇₀ in DMPC-liposomes prepared by the exchange reaction at (A) 80 °C, (B) 30 °C and (C) 0 °C after incubation times of 0 (blue line), 1 (black line), 24 (red line), 48 (orange line) and 72 h (green line).

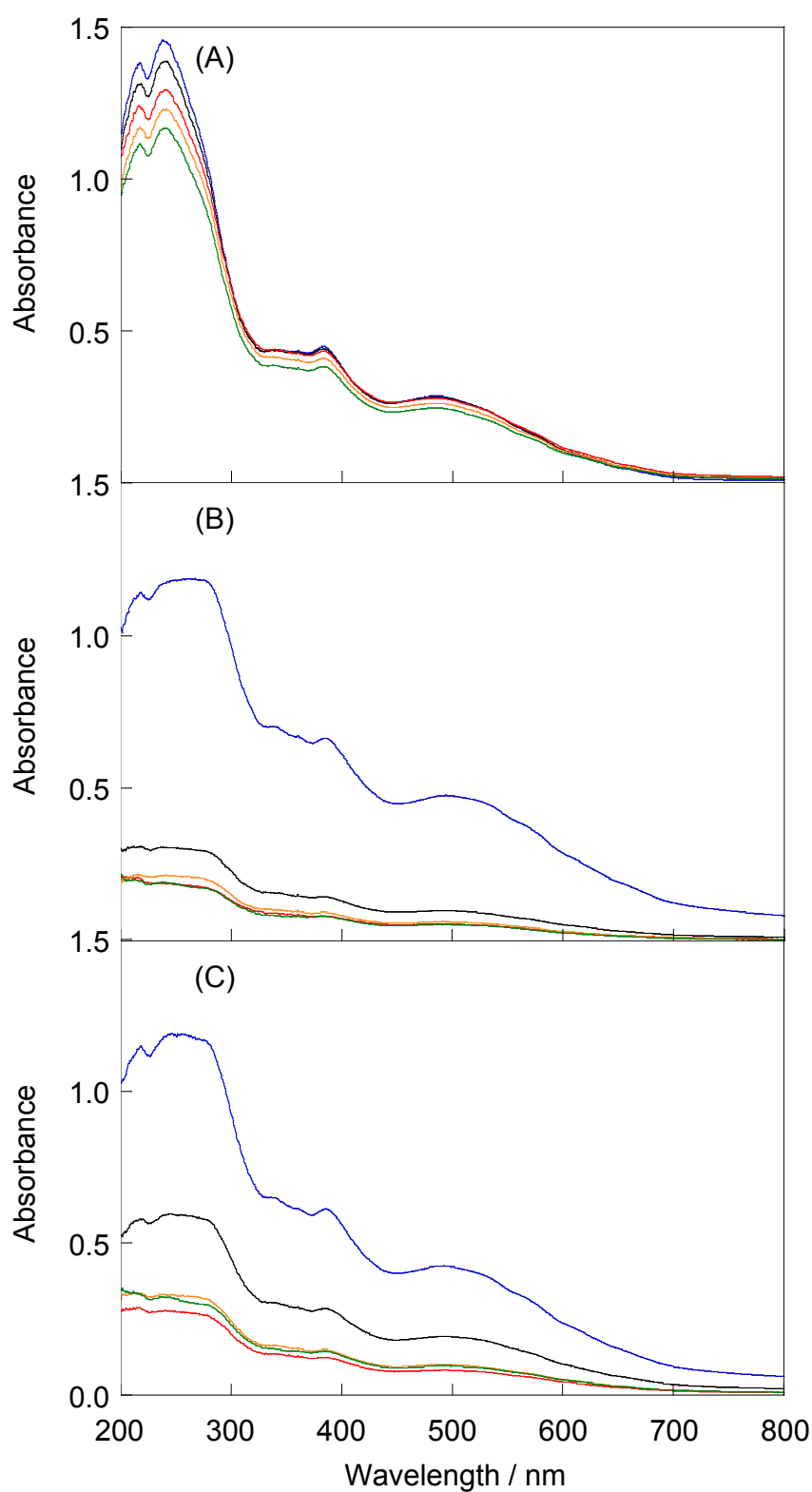


Fig. S3 UV-vis absorption spectra of LMIC₇₀ in DPPC-liposomes prepared by the exchange reaction at (A) 80 °C, (B) 30 °C and (C) 0 °C after incubation times of 0 (blue line), 1 (black line), 24 (red line), 48 (orange line) and 72 h (green line).

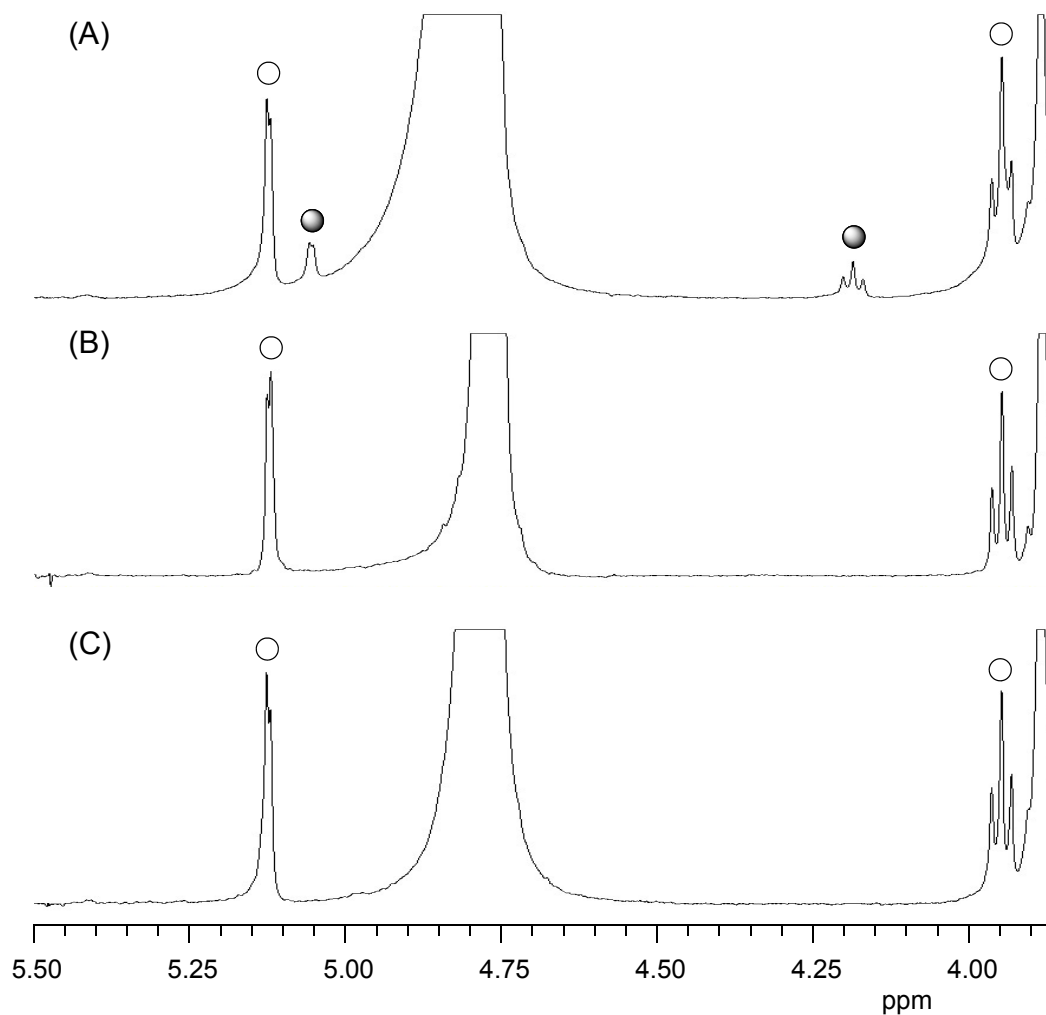


Fig. S4 ^1H NMR spectra at 600 MHz in D_2O at 25 °C of $\gamma\text{-CDx}$ and the $\text{C}_{60}\cdot\gamma\text{-CDx}$ complex ($[\gamma\text{-CDx}] = 1.02$ mM, $[\text{C}_{60}] = 0.10$ mM) (A) before the addition of liposomes and after heating at 80 °C for 1 h (B) in the presence of DMPC (1.00 mM) and in the presence of DPPC (○: free $\gamma\text{-CDx}$, ●: the $\text{C}_{60}\cdot\gamma\text{-CDx}$ complex).

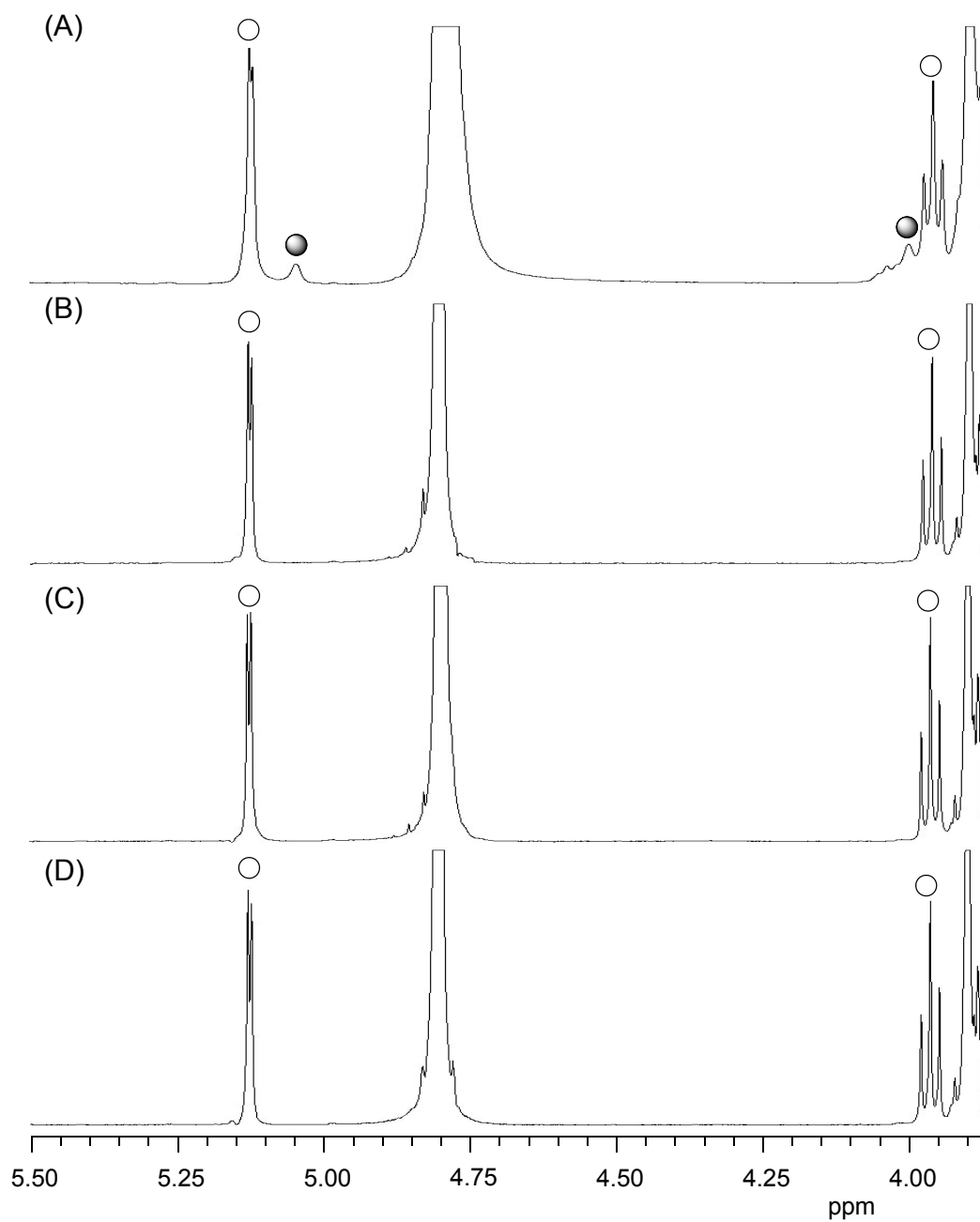


Fig. S5 ¹H NMR spectra at 600 MHz in D₂O at 25 °C of γ -CDx and the C₇₀: γ -CDx complex ($[\gamma$ -CDx] = 1.90 mM, [C₇₀] = 0.10 mM): (A) before the addition of liposomes and after mixing (B) at 80 °C, (C) at 30 °C and (D) at 0 °C for 10 min in the presence of DMPC (1.00 mM) (○: free γ -CDx, ●: C₇₀: γ -CDx complex).

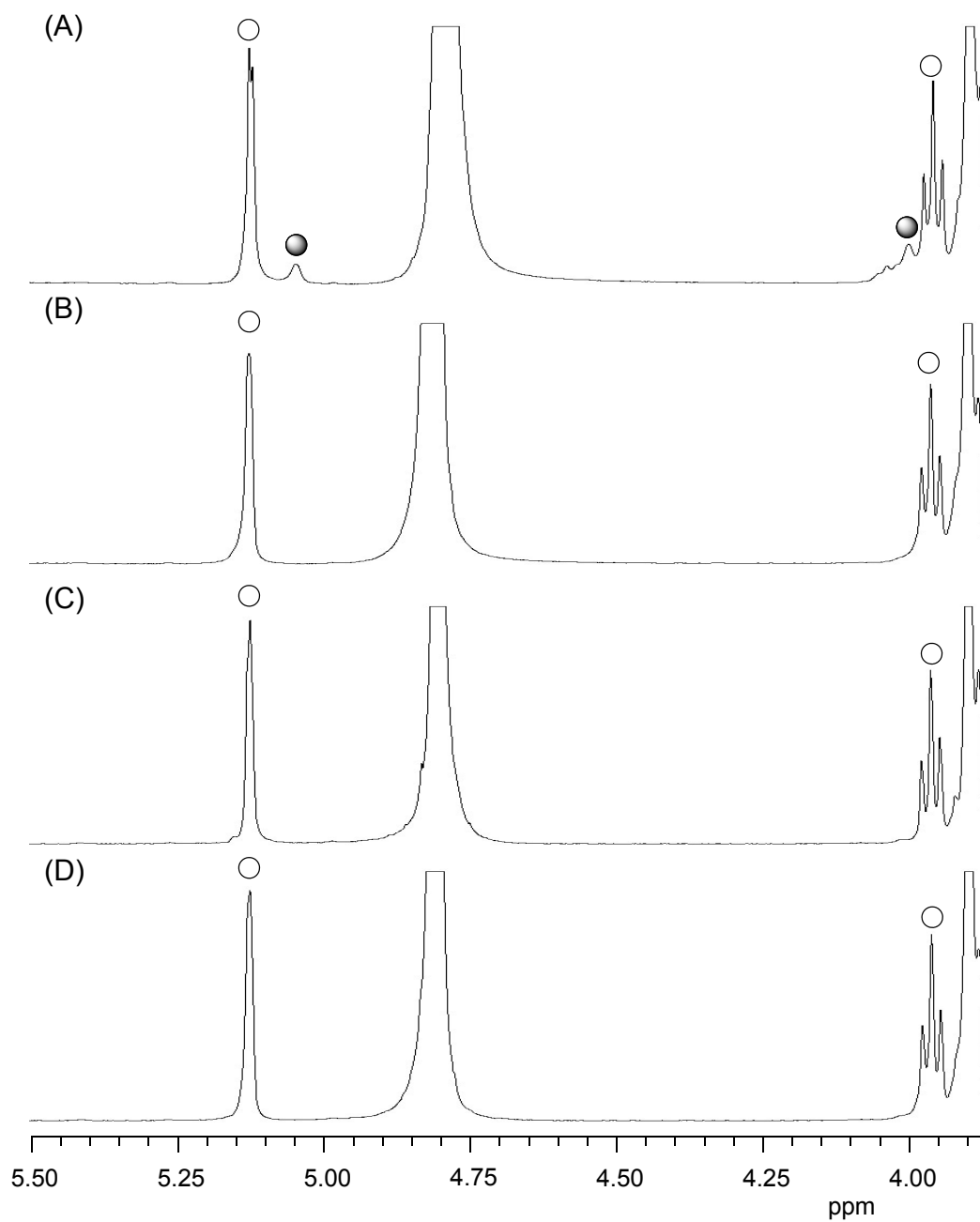


Fig. S6 ¹H NMR spectra at 600 MHz in D₂O at 25 °C of γ -CDx and the C_{70} : γ -CDx complex ($[\gamma\text{-CDx}] = 1.90$ mM, $[C_{70}] = 0.10$ mM): (A) before the addition of liposomes and after mixing (B) at 80 °C, (C) at 30 °C and (D) at 0 °C for 10 min in the presence of DPPC (1.00 mM) (○: free γ -CDx, ●: C_{70} : γ -CDx complex).

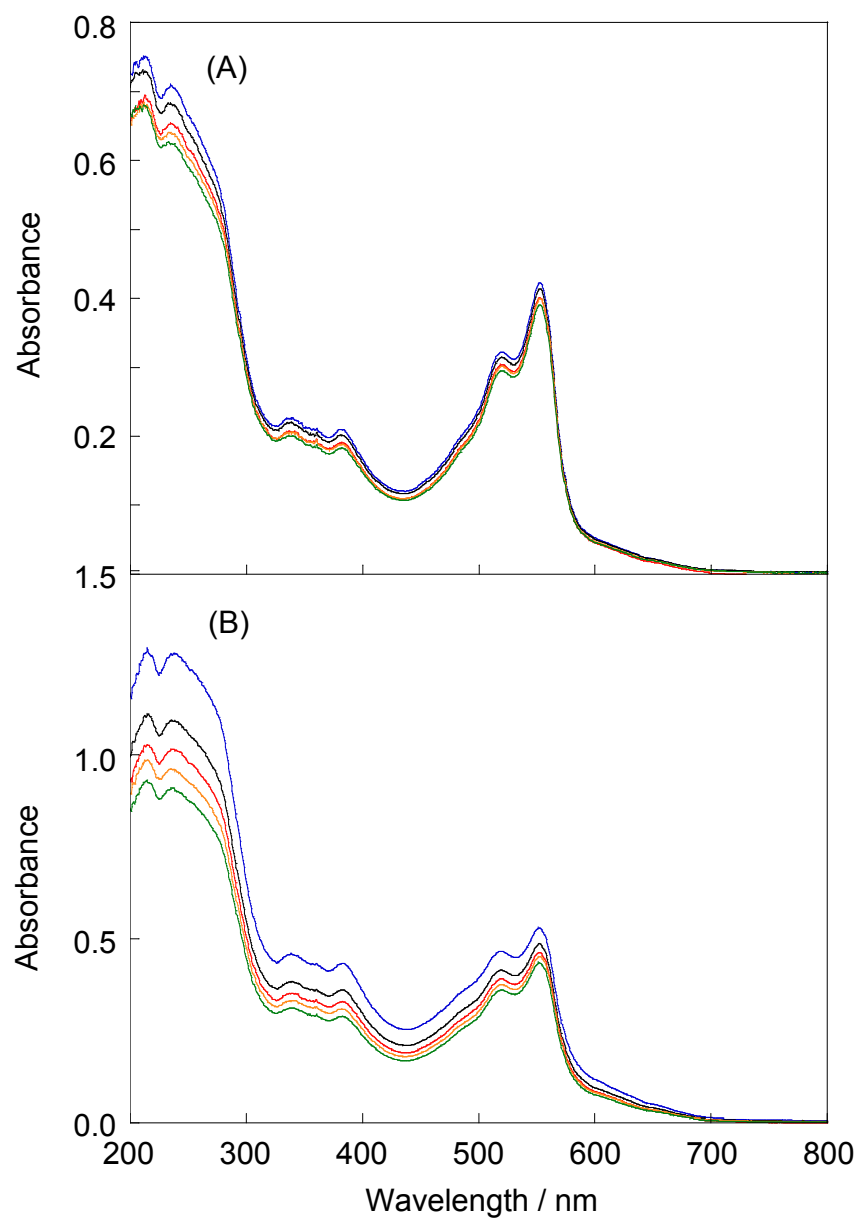


Fig. S7 UV-vis absorption spectra of LMIC₇₀ of DPPC•DiI-liposomes at (A) 5 mol% C₇₀ and (B) 10 mol% C₇₀ prepared by the exchange reaction at 30 °C after incubation times of 0 (blue line), 1 (black line), 24 (red line), 48 (orange line) and 72 h (green line).

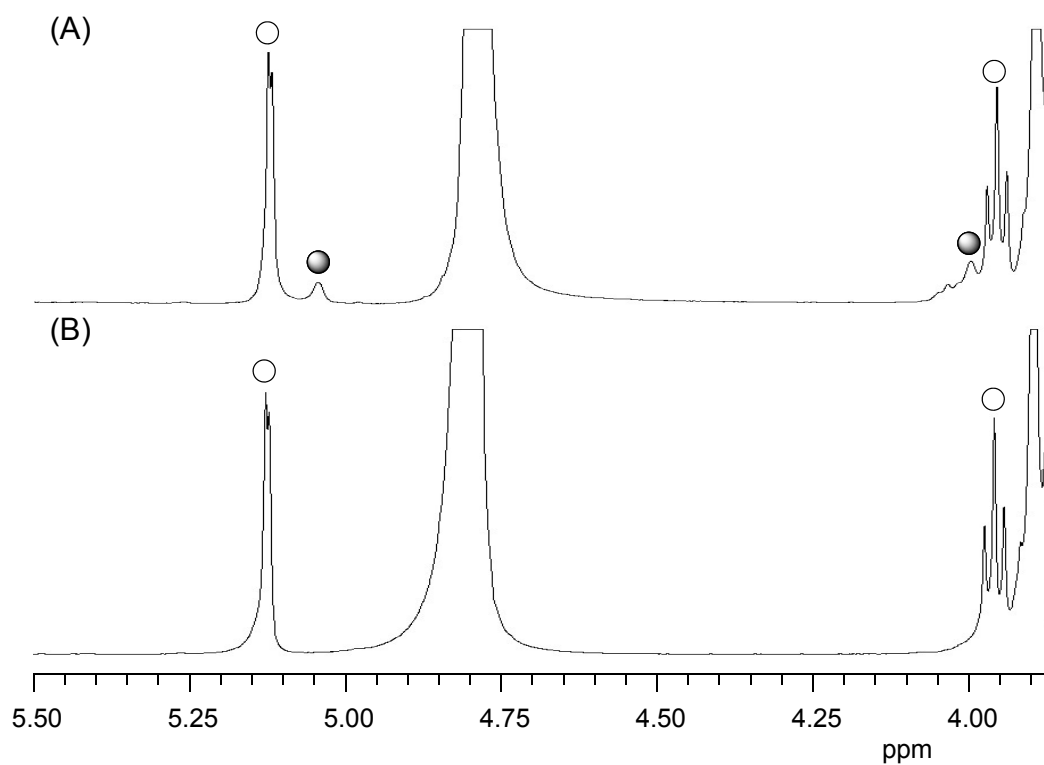


Fig. S8 ¹H NMR spectra at 600 MHz in D₂O at 25 °C of γ -CDx and the C_{70} · γ -CDx complex ($[\gamma\text{-CDx}] = 1.90$ mM, $[C_{70}] = 0.10$ mM): (A) before the addition of liposomes and (B) after mixing at 30 °C for 10 min in the presence of DPPC (1.00 mM) and DiI (0.025 mM) (○: free γ -CDx, ●: C_{70} · γ -CDx complex).

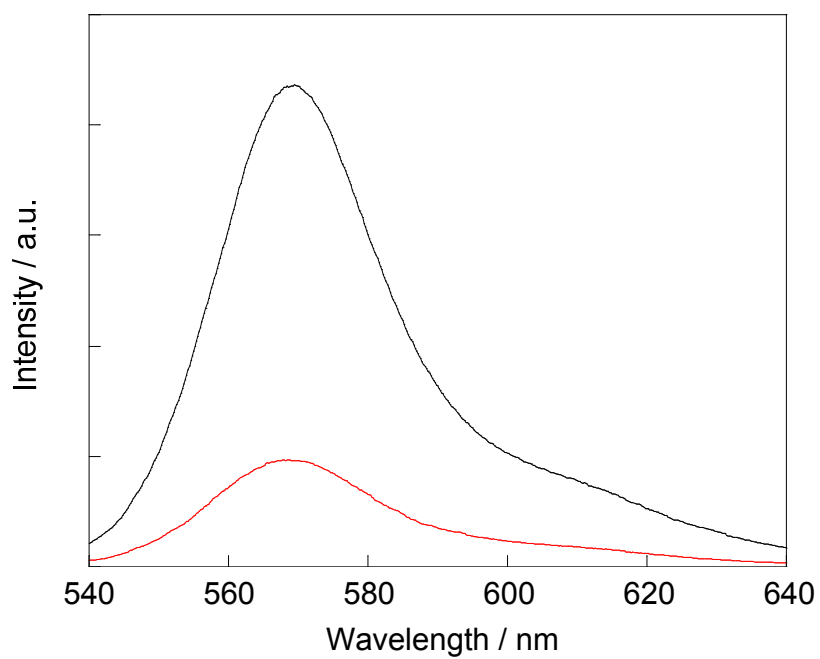


Fig. S9 Fluorescence spectral change of DPPC•DiI-liposomes before (black line) and after (red line) the addition of the C₇₀·γ-CDx complex ([DPPC] = 1.00 mM, [DiI] = 0.25 mM and [C₇₀] = 0.10 mM) at 30 °C.

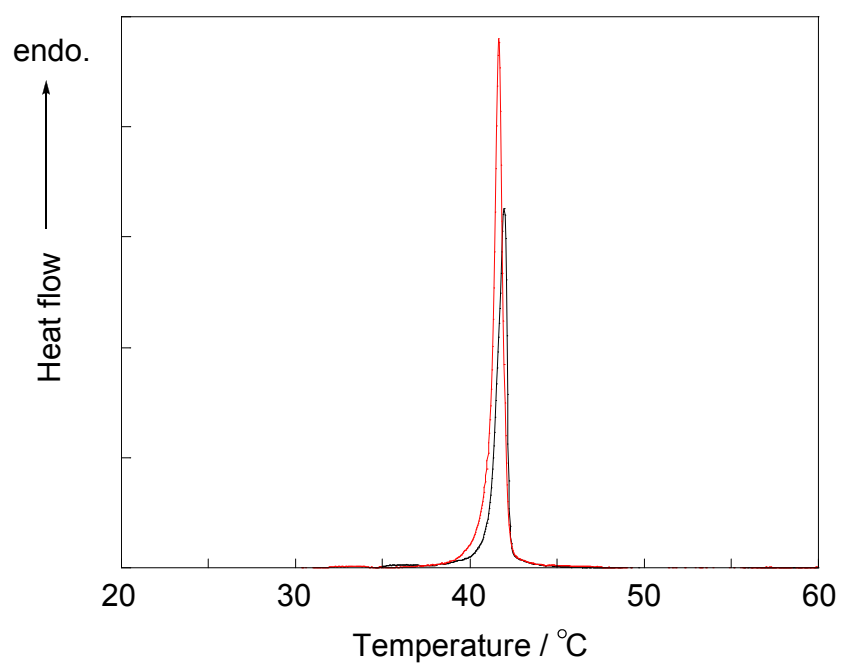


Fig. S10 DSC curves of DPPC liposomes in the presence (red line) and absence (black line) of DiI in D_2O .