Electronic Supplementary Information

Porphyrin-uptake in liposomes and living cells using an exchange method with cyclodextrin

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Table S1 Average hydrodynamic diameter D_{hy} (nm) determined by dynamic light scattering at 25 °C.

[**1**]/[DMPC] / mol%	Average D_{hy}/nm	PDI[a]
0.0	85.3	0.20
1.0	73.2	0.23
2.5	75.5	0.31
5.0	70.6	0.44
10.0	74.1	0.47

[a]PDI: Polydispersity index.

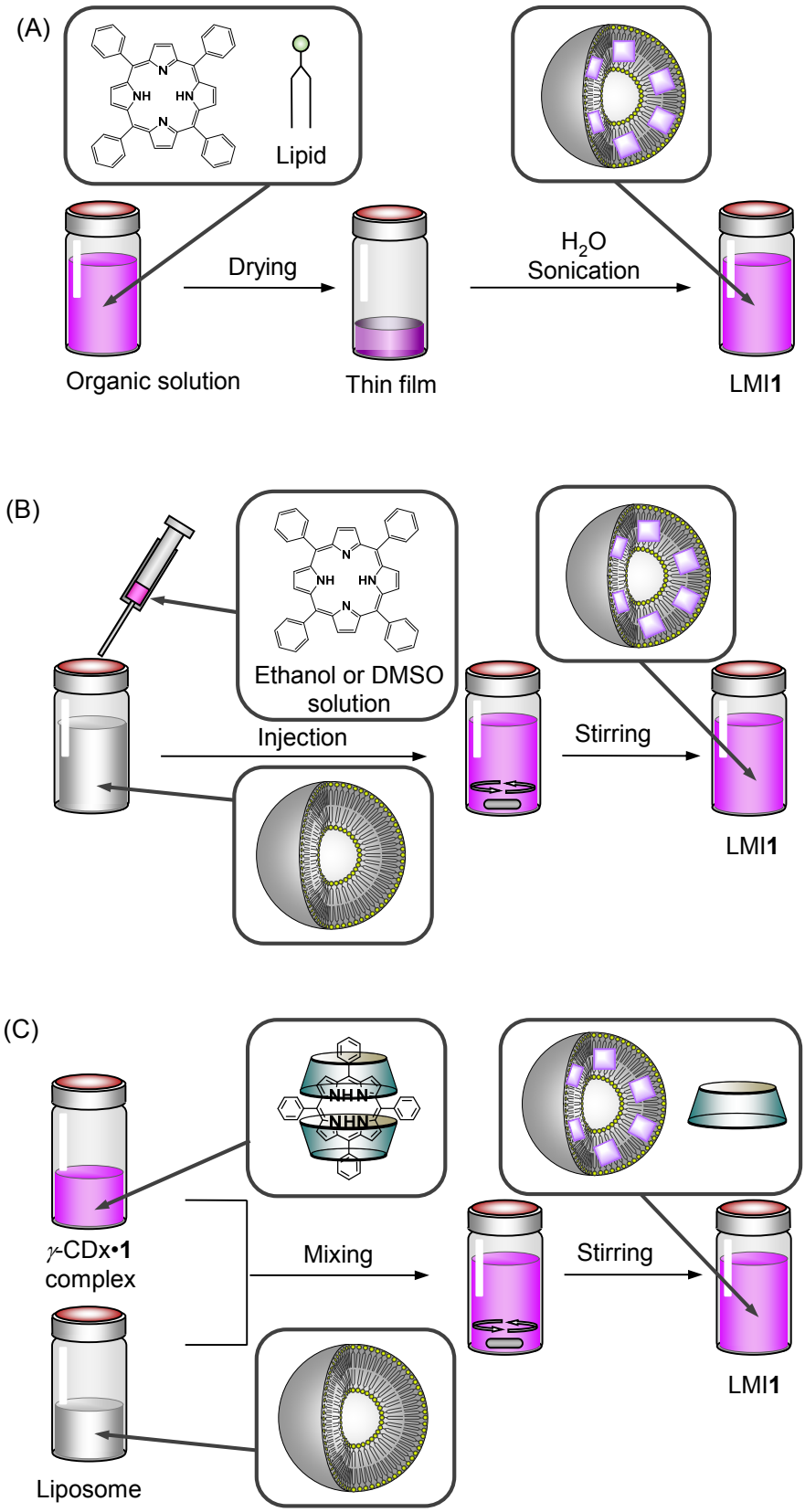

Fig. S1 (A) Premixing method, (B) injection method and (C) exchange method for the preparation of LMI**1**.

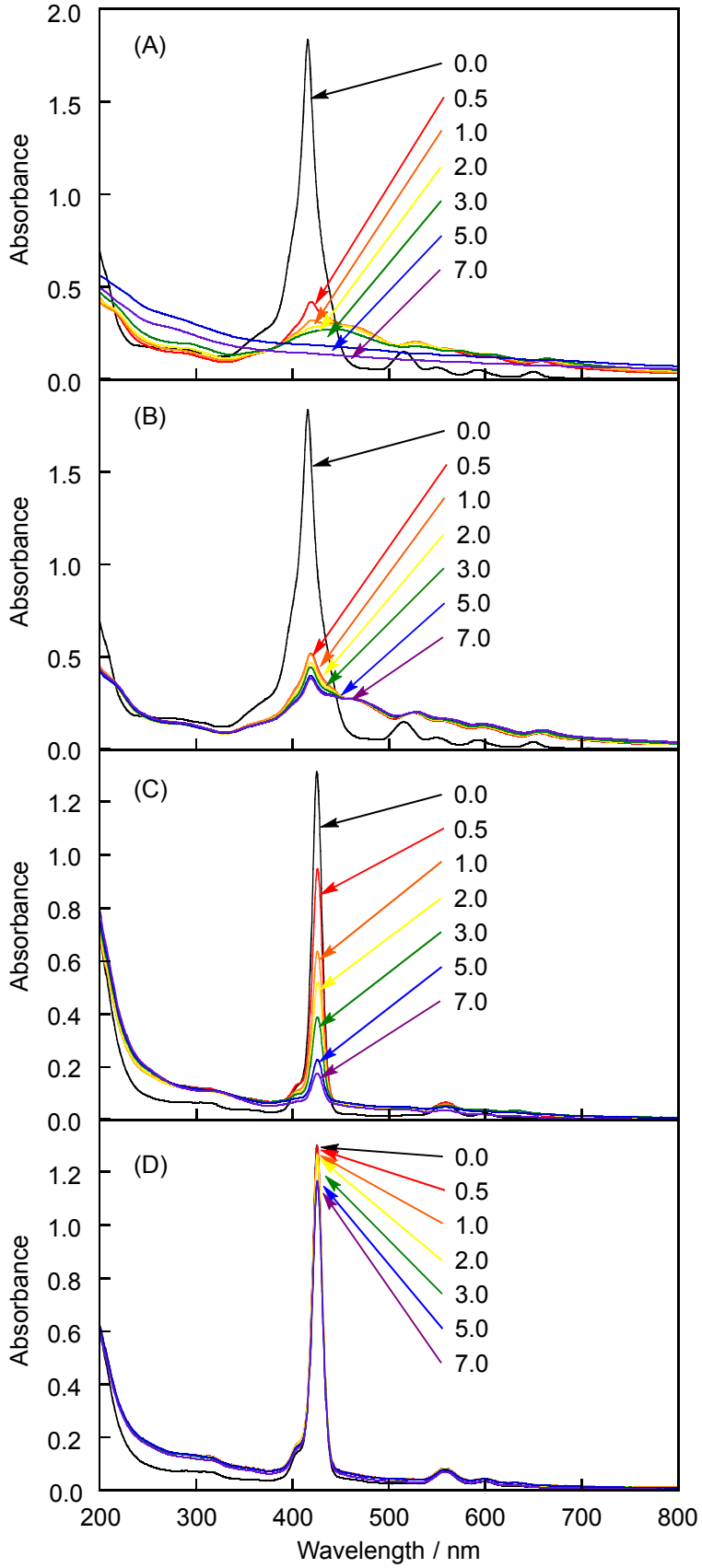

Fig. S2 UV-vis absorption spectra of (A) and (B) LMI**1** and (C) and (D) LMI**2** kept (A) and (C) at ambient temperature and (B) and (D) at 4 °C with incubation times 0, 0.5, 1, 2, 3, 5 and 7 days. [**1** or **2**]/[DMPC] =5.0 mol%.

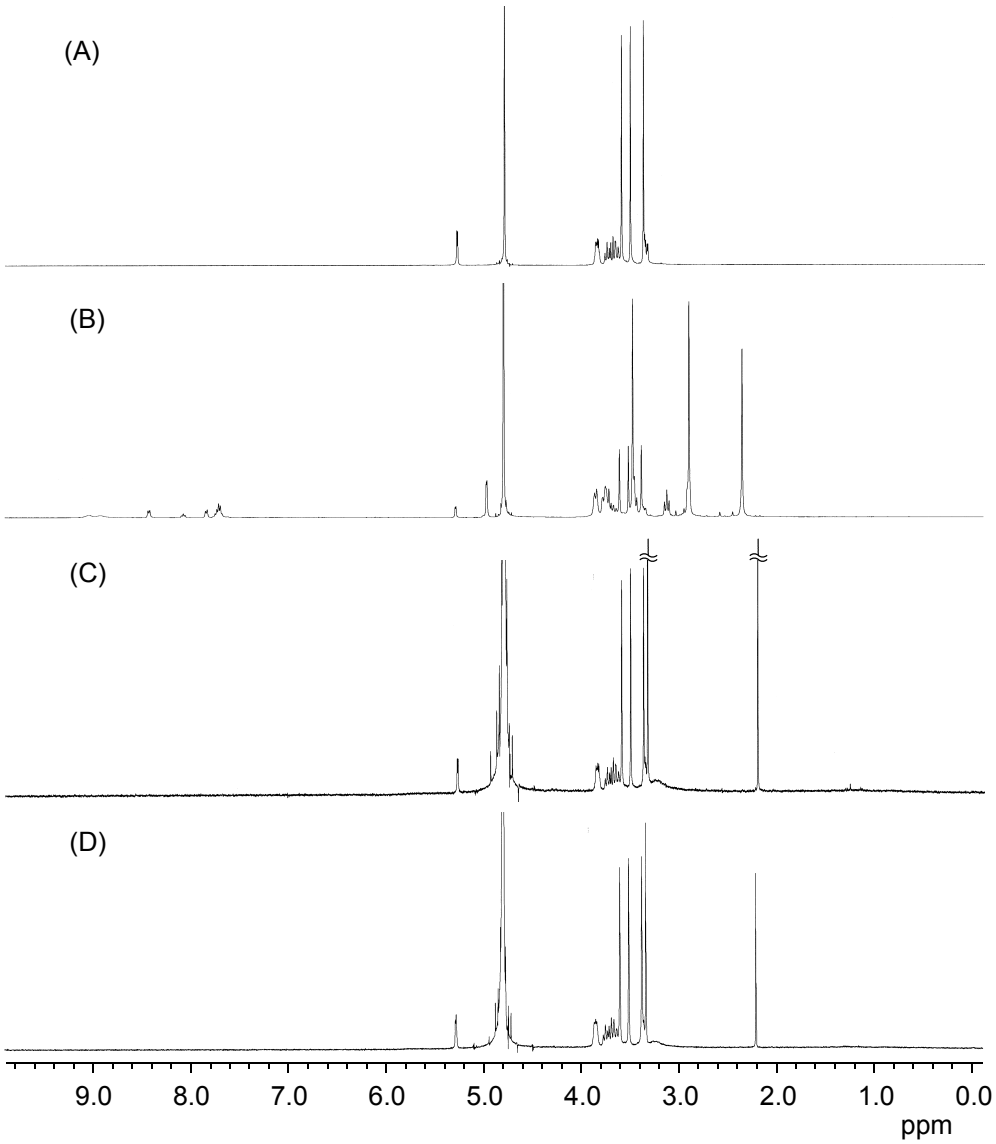

Fig. S3 Complete ^{1}H NMR spectra of (A) TMe-*β*-CDx, (B) the **1**•TMe-*β*-CDx complex, and (C) and (D) LMI**1** {[**1**]/[DMPC] = (C) 5.0 and (D) 10.0 mol%, [**1**]/[DMPC] = 10.0 mol%) in D_2O at 25 °C.

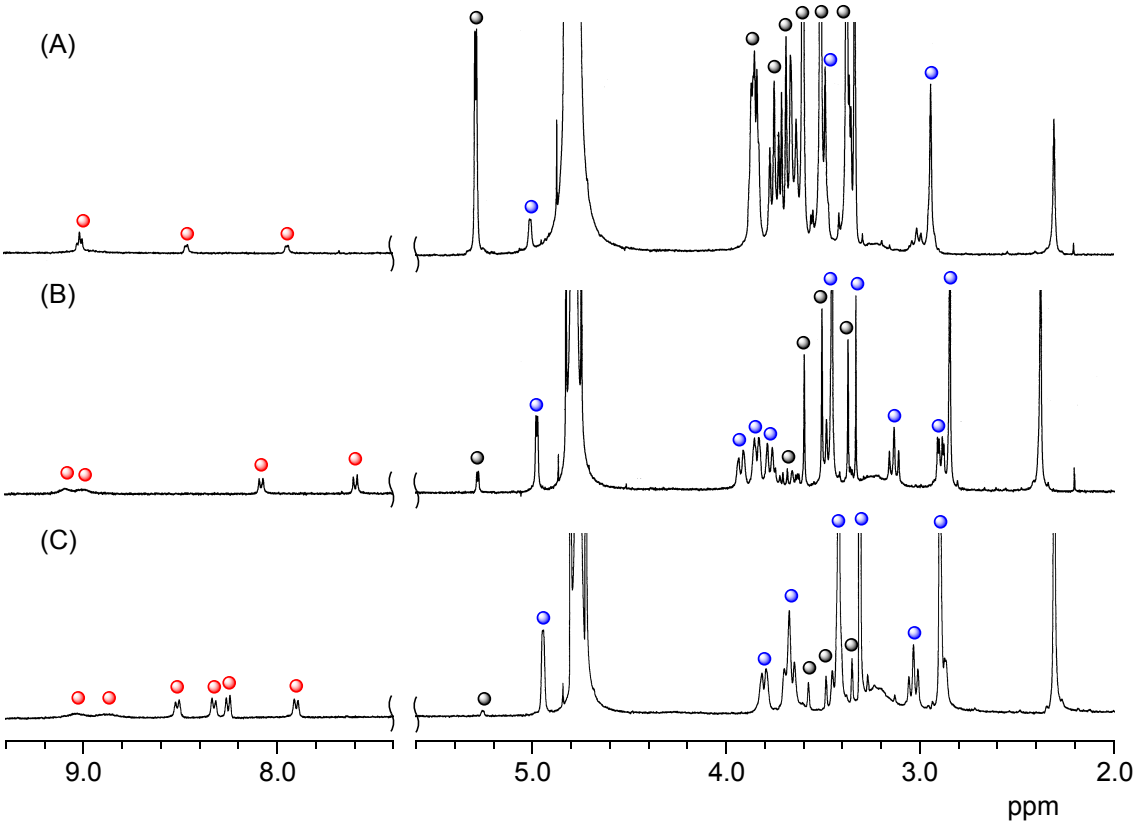

Fig. S4 Partial ^{1}H NMR spectra of a mixture of (A) the **3**•TMe-*β*-CDx complex, (B) **4**•TMe-*β*-CDx complex or (C) **5**•TMe-*β*-CDx complex and DMPC liposomes after being heated at 80 °C for 30 min ([**3**, **4** or **5**]/[DMPC] = 10.0 mol%) in D_2O at 25 °C (●: free TMe-β-CDx, ●: **3**, **4** or **5** and ●: TMe-β-CDx in the **3**, **4** or **5**•TMe-β-CDx complex).

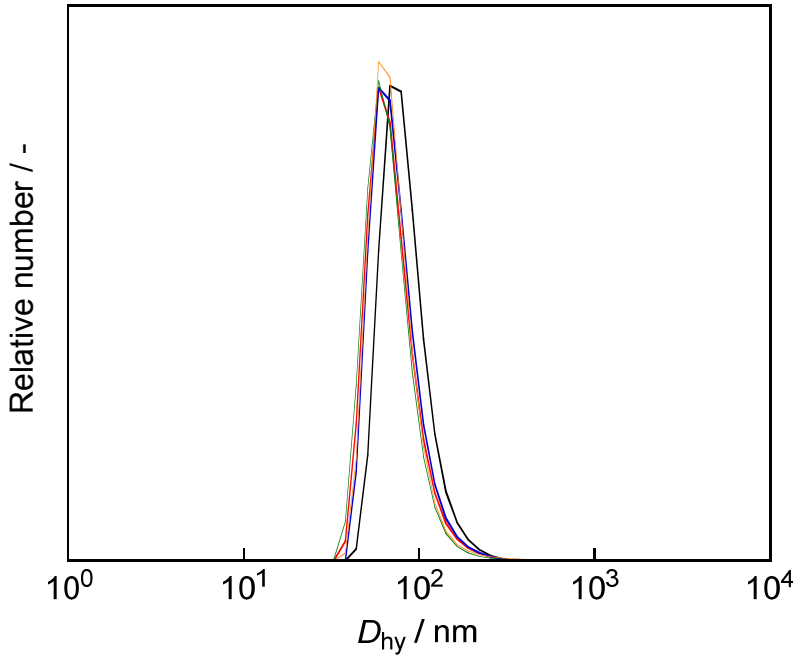

Fig. S5 Hydrodynamic diameters (D_{hy}) of LMI**1** based on DLS measurements. [**1**]/[DMPC] = 0.0 (black line), 1.0 (red line), 2.5 (blue line), 5.0 (green line) and 10.0 (orange line) mol% at room temperature.

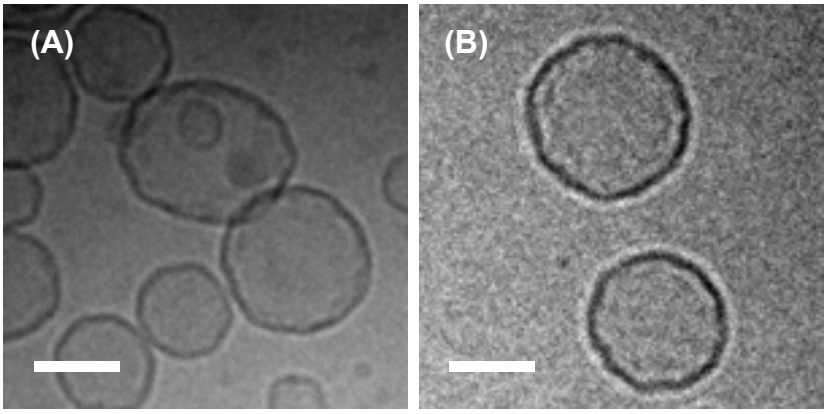

Fig. S6 Cryo-TEM images of (A) the DMPC liposomes and (B) LMI**1** ([**1**]/[DMPC] = 10 mol%). All of the scale bars represent 50 nm.

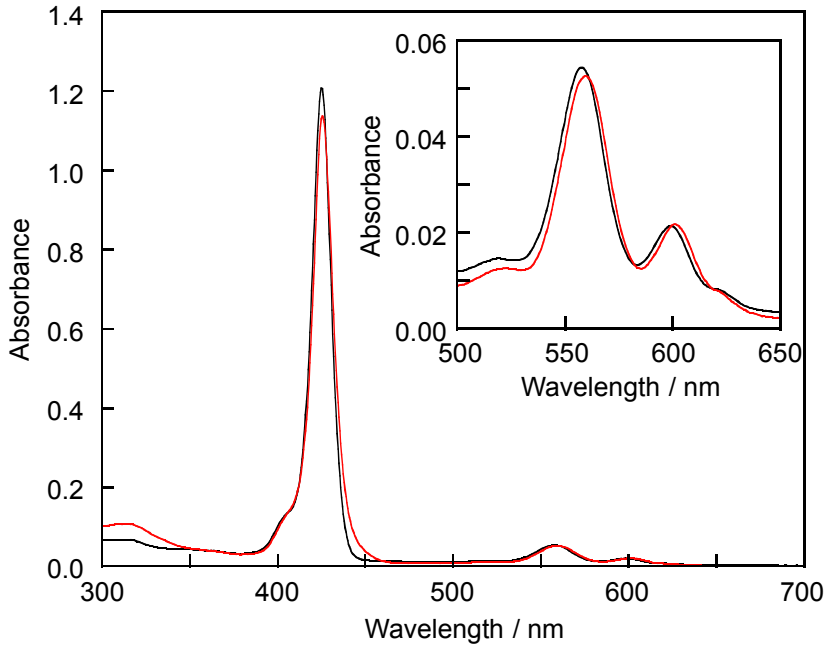

Fig. S7 UV-vis absorption spectra of LMI**2** (black line) and LMI**2-6** (red line) in water. All spectra were recorded at 25 °C with a 1mm cell. [**2**]/[DMPC] = [**6**]/[DMPC] =5.0 mol%. The inset shows the 400–500 nm region.

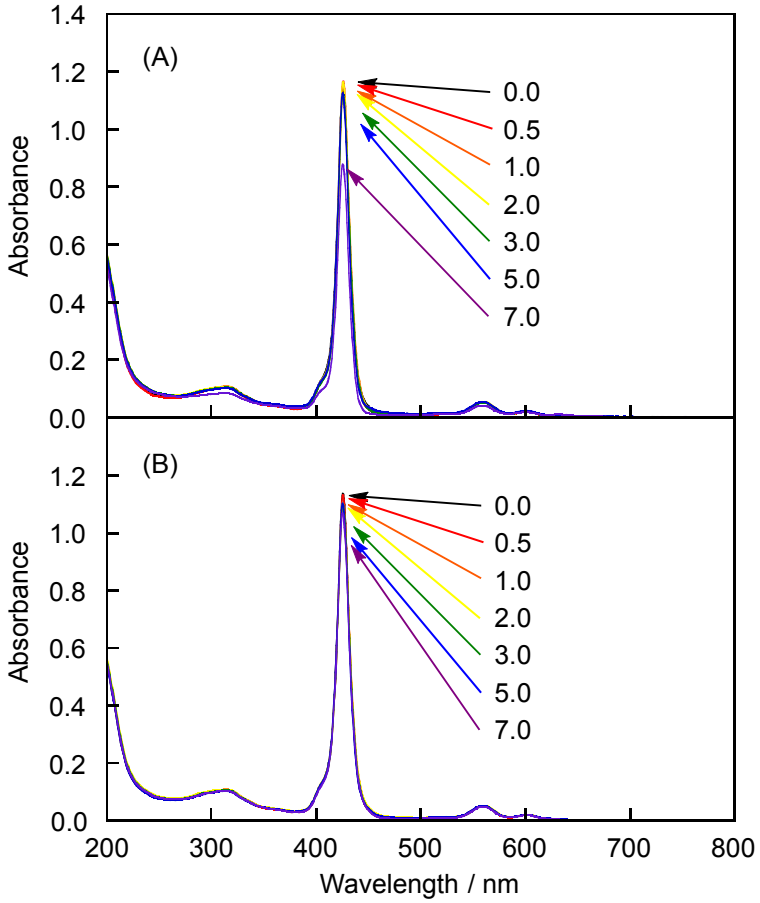

Fig. S8 UV-vis absorption spectra of LMI**2-6** kept (A) at ambient temperature and (B) at 4 °C with incubation times 0, 0.5, 1, 2, 3, 5 and 7 days. [**2**]/[DMPC] = [**6**]/[DMPC] =5.0 mol%.

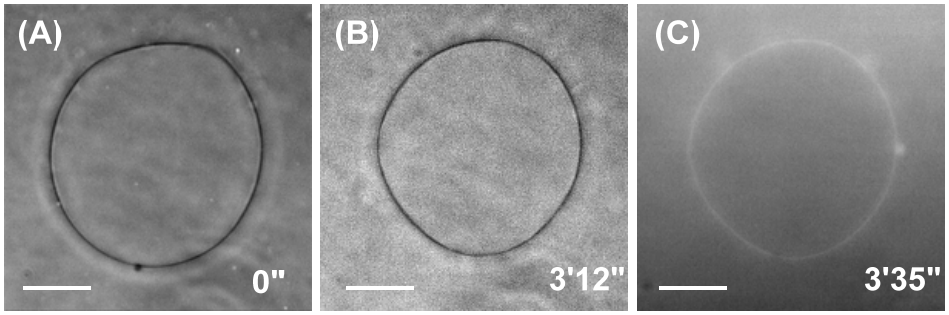

Fig. S9 Another series of the experiments in Fig. 9: Phase contrast images of the GUVs consisting of POPC before (A) and after (B) the addition of the **1**•TMe-*β*-CDx complex (0.1 mM) and (C) fluorescent microscopy image of (B). The time elapsed following the starting injection of the **1**•TMe-*β*-CDx complex solution through the micropipette has been indicated for each image. All of the scale bars represent 10 μm.