Electronic Supplemental Information

Title

Controllable Biomolecule Release from Self-Assembled Organic Nanotubes with Asymmetric Surfaces: pH- and Temperature Dependence

Authors

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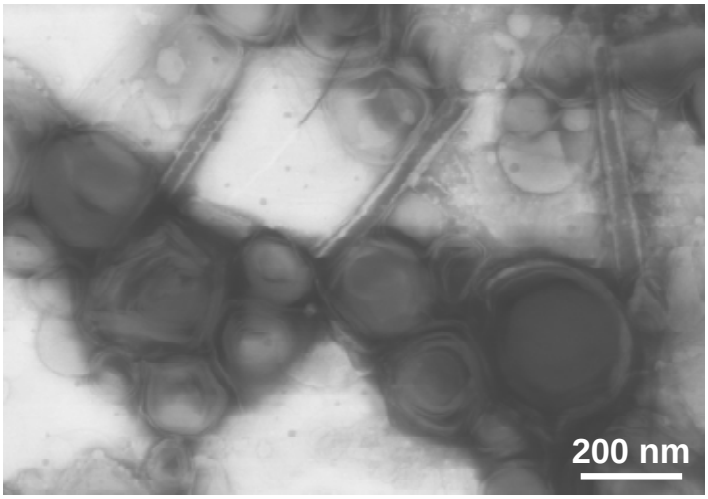

Figure S1. Scanning TEM image of the liposomes negatively stained with phosphotungstate.

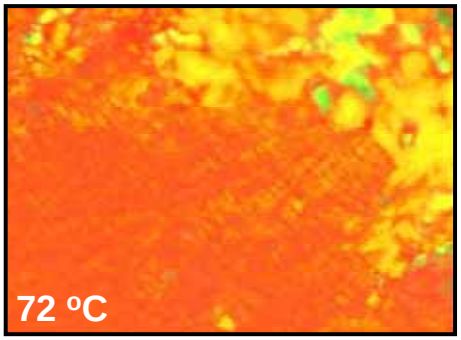

Figure S2. Polarized optical micrograph of fully hydrated organic nanotubes at 72 ^{o}C. The fanlike texture shows the formation of liquid crystalline phase. The image was recorded using a polarized light microscope (Olympus BX51) equipped with 3-CCD video camera recorder (Olympus CS530MD). Temperature was controlled using a Mettler FP82 hot stage linked to a Mettler FP90 with an accuracy of 0.4 ^{o}C.

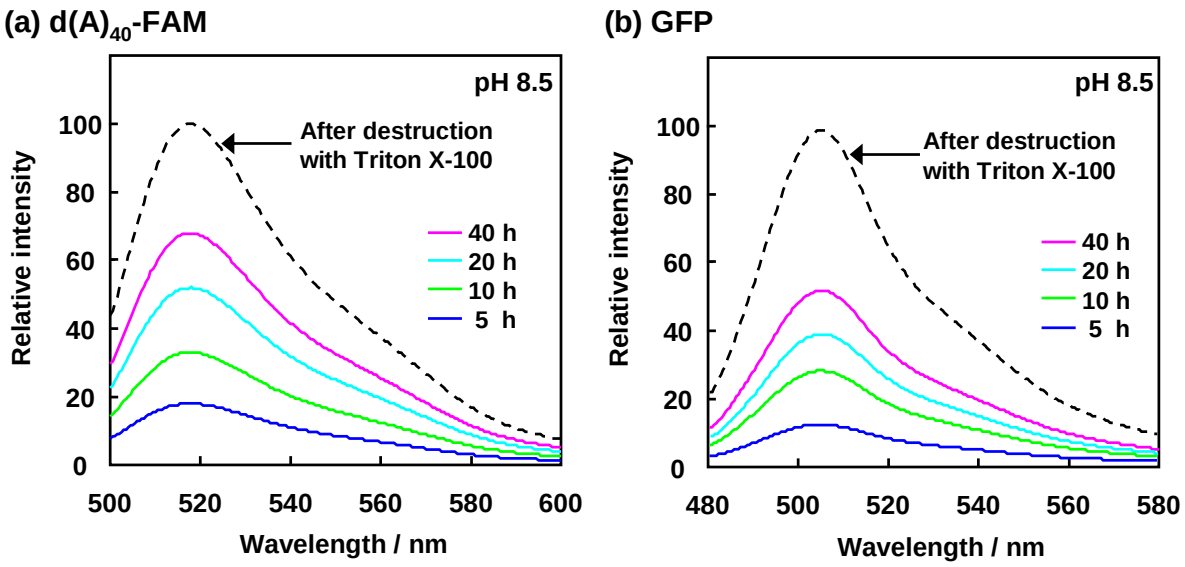

Figure S3. Fluorescence spectra of (a) d(A)$_{40}$-FAM or (b) GFP that were released in the bulk solution. Time dependence of the spectra was measured at pH 8.5 and 25 ^{o}C. The released guests were completely separated from the organic nanotubes encapsulating the guests by membrane filtration. Dotted spectrum for the guest initially encapsulated in the hollow cylinder was measured after destruction of the organic nanotube by addition of 5% Triton X-100.

Excitation wavelength: 490 nm for d(A)$_{40}$-FAM, 473 nm for GFP.

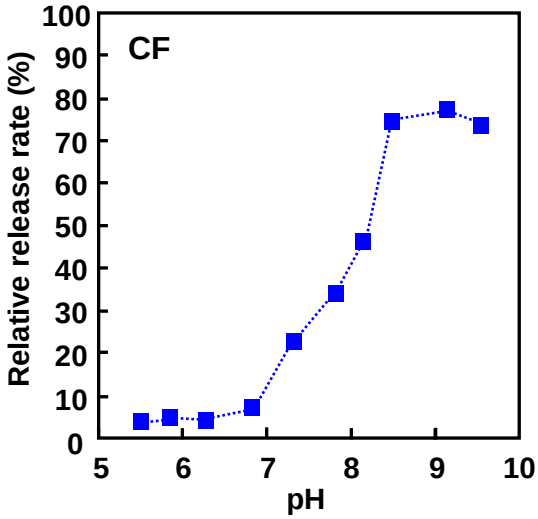

Figure S4. pH dependence of the release rate of CF. The release rate was measured after 40 h.