Supplementary information

Controlled assembly of filamentous viruses into hierarchical nano- to microstructures at liquid/liquid interfaces

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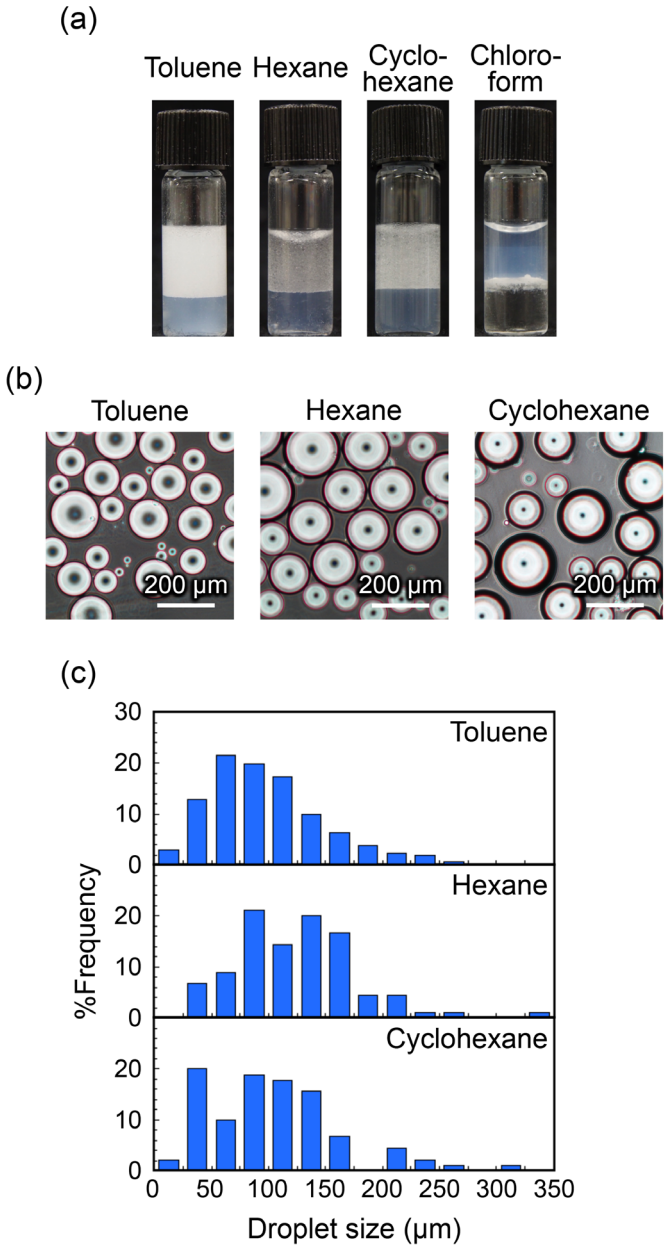

Fig. S1 Optical photographs of emulsions formed with M13 phage aqueous solutions (150 nM) and different organic solvents (toluene, hexane, cyclohexane, and chloroform) at 48 h after emulsification. (b) Optical photographs and (c) size distribution of emulsions using different organic solvents at 48 h after emulsification.

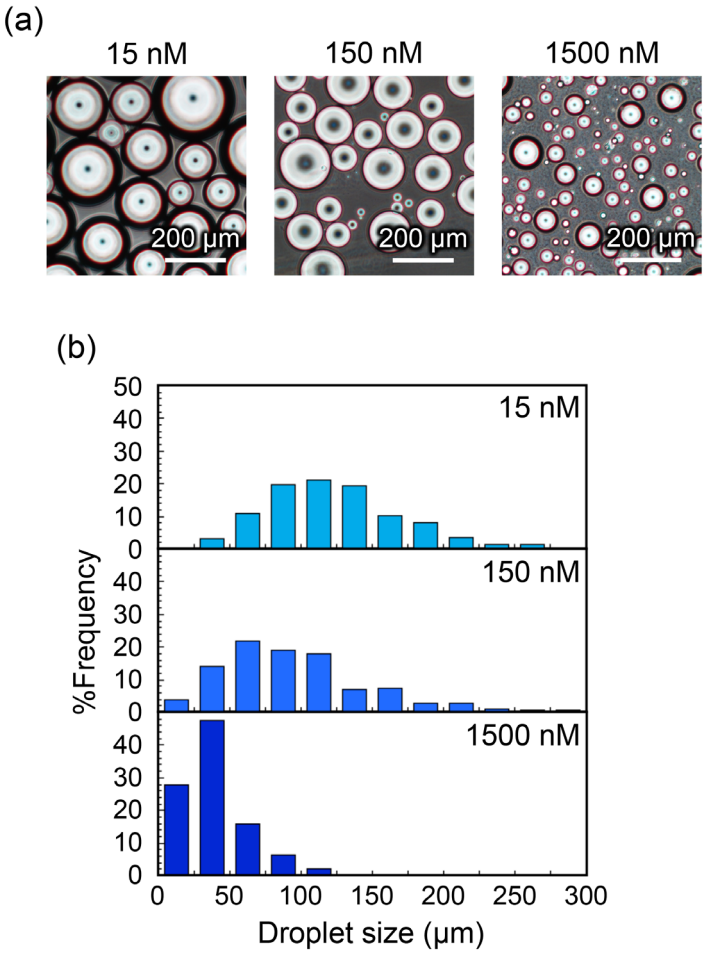

Fig. S2 (a) Optical photographs and (b) size distribution of the emulsions using different concentrations of M13 phage solutions at 48 h after emulsification.

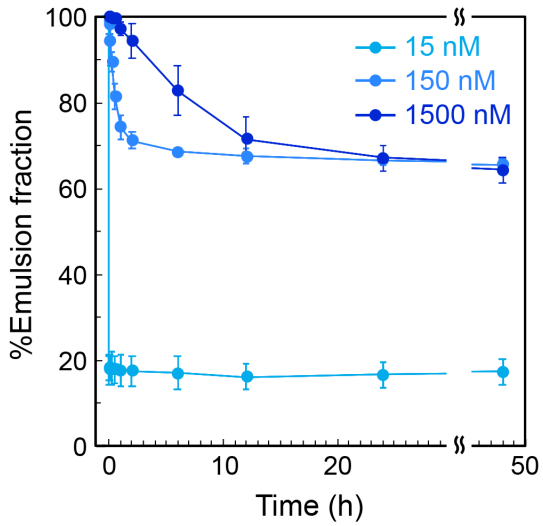

Fig. S3 Changes in volume fractions of residual emulsions as a function of incubation time after emulsification. The concentration conditions used to form emulsions are shown in the figure.

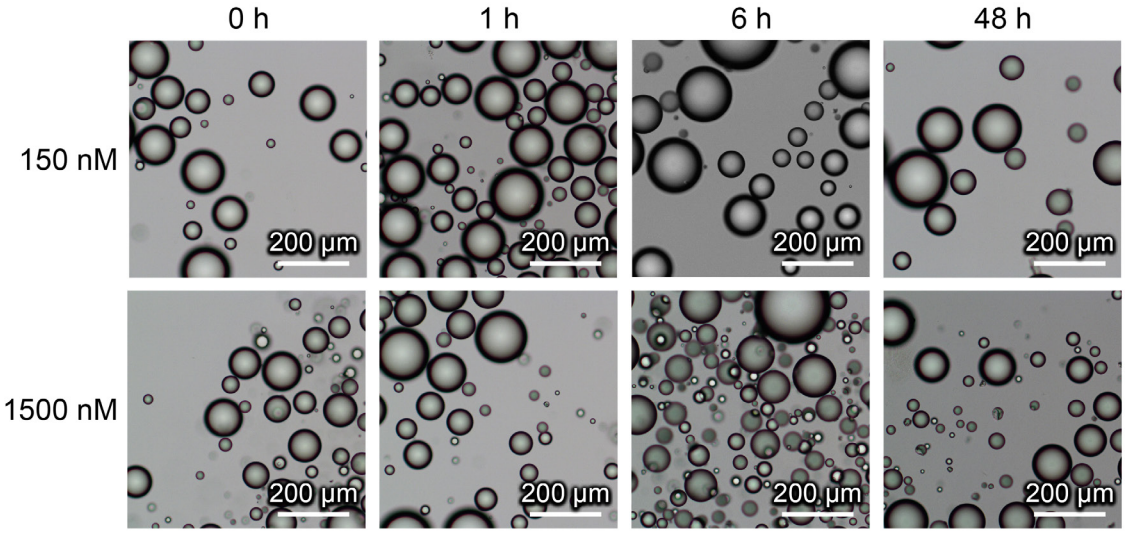

Fig. S4 Optical photographs of the emulsions prepared using 150 nM and 1500 nM of M13 phage.

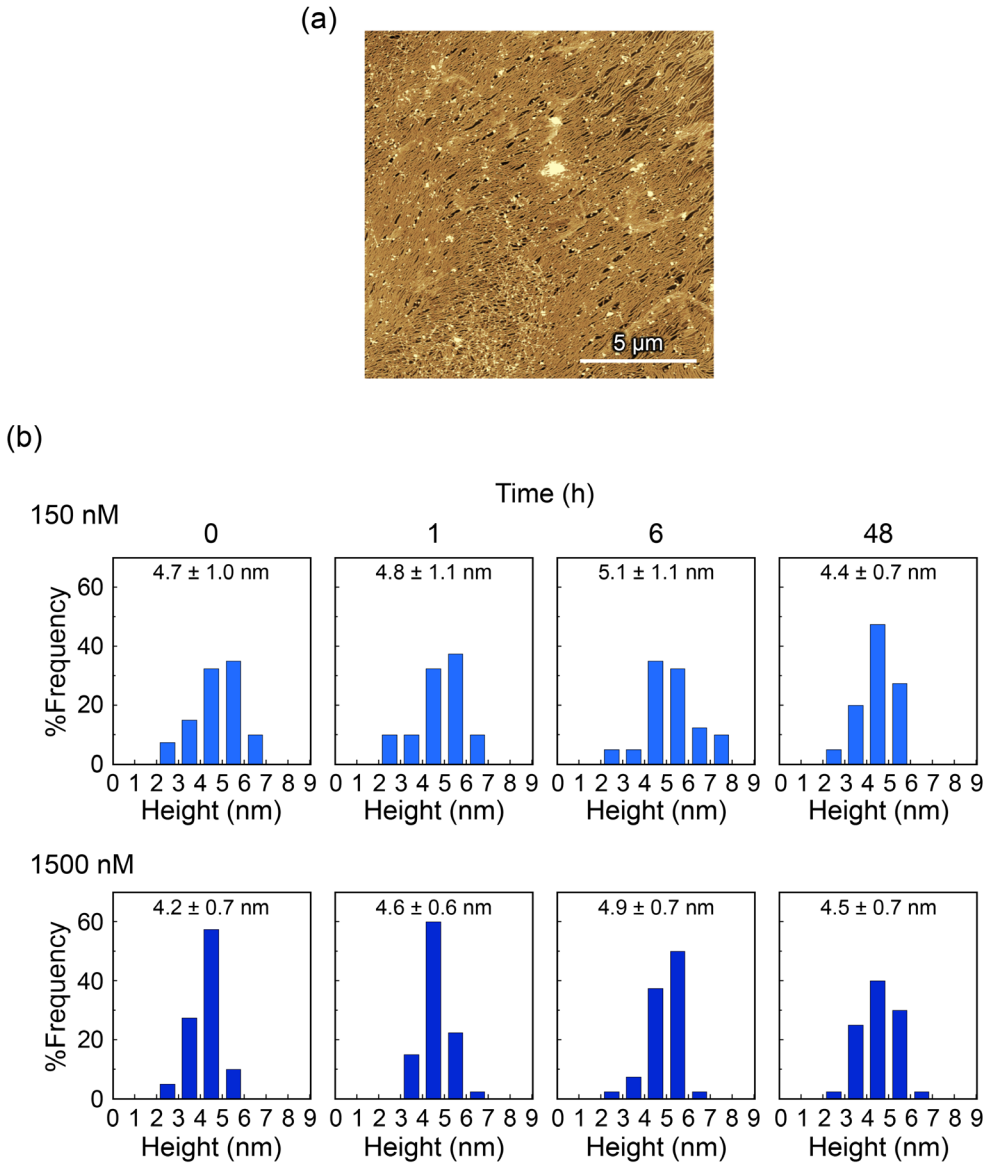

Fig. S5 (a) Expanded AFM image of the surfaces of emulsions prepared with 150 nM of M13 phage at 48 h after emulsification. (b) Height distribution of the observed fibrous structures at the surface of emulsions prepared with 150 or 1500 nM. The incubation time is shown in the figure.

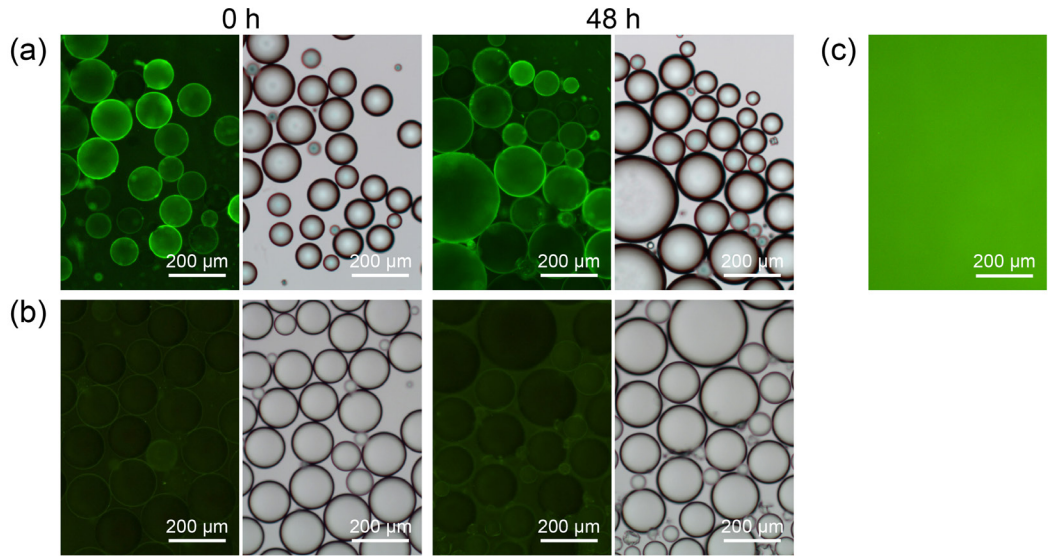

Fig. S6 Fluorescence microscopy images of SYBR Green II-stained emulsions prepared with (a) 150 nM and (b) 1500 nM of M13 phages immediately after emulsification (0 h) and incubation after 48 h. (c) Control experiment using the original M13 phage (1500 nM) stained with SYBR Green II.

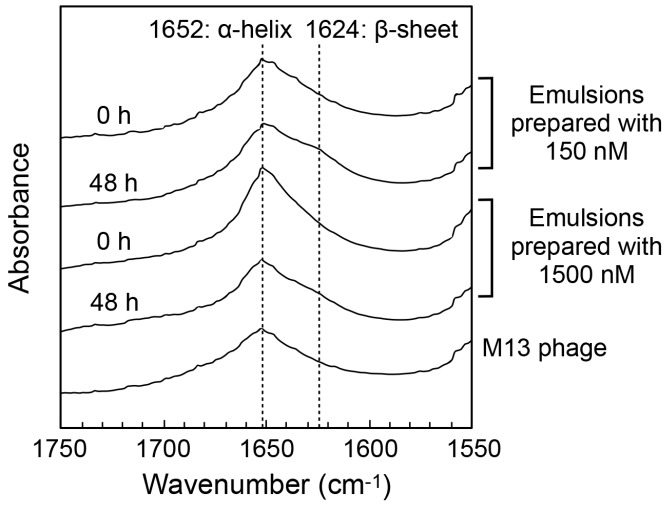

Fig. S7 ATR/FT-IR absorption spectra of the assemblies and the original M13 phage.

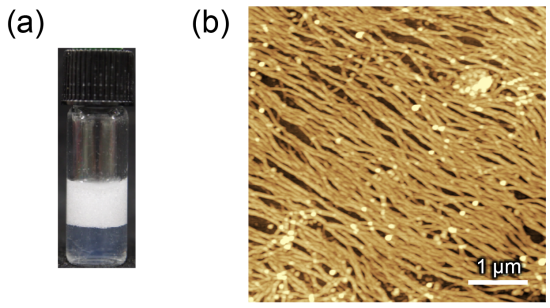

Fig. S8 (a) Optical photograph of a vial in which emulsions formed (150 nM) after long-term incubation (1 year). (b) AFM image of the emulsion prepared with 150 nM of M13 phage after incubation of 1 year.