Supporting Information

Observing the Kinetic Pathway of Nanotube Formation from Bolaamphiphiles by Time-Resolved Small-Angle X-ray Scattering

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Comparison of the experimentally-obtained data with the model of a short tubular structure. The scattering intensity of a tube (uniform inner density; applicable to a short tube) with the length (L) and the cross-sectional radius of exterior (R_E) and interior (R_I) are expressed as follows:

$$I_{\text{tube}}(q) \propto \int_0^{\pi/2} \left\{ \left[\frac{R_E^2 J_1(qR_E \sin\alpha)}{qR_E \sin\alpha} - \frac{R_I^2 J_1(qR_I \sin\alpha)}{qR_I \sin\alpha} \right] \frac{\sin\left[q(L/2)\cos\alpha\right]}{q(L/2)\cos\alpha} \right\}^2 \sin\alpha \, d\alpha \quad \text{(S1)}$$

We note that eq 3 in the main text is applicable only in a case that L is long enough, but eq S1 is applicable regardless of the L value. Although eq S1 neglects the structure within the layer as shown in Figure 3b, such a local structure influences higher q region ($q > 0.5$ nm^{-1}). Figure S1 shows the SAXS profile at $t = 0.027$ s and the fitted curves by the tube model (eq S1) with the various L values under $R_E = 9.39$ nm and $R_I = 5.6$ nm. The short tube model could not reproduce the experimentally obtained data particularly in the sharp oscillation at $q \sim 0.3$ nm^{-1}.

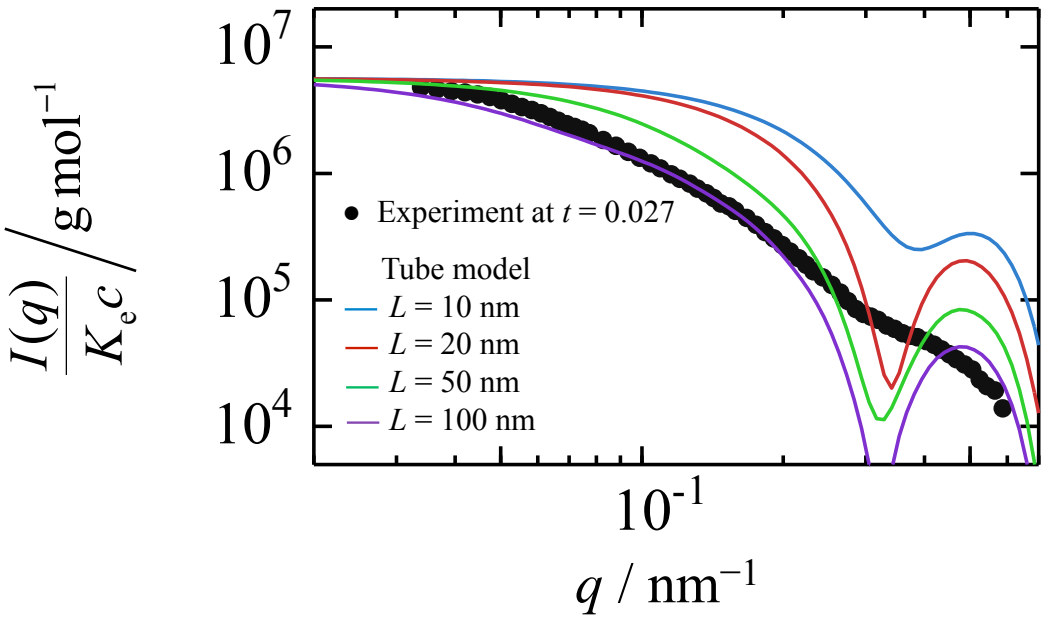

Figure S1. SAXS profile at t = 0.027 (black circles). The black solid curves represent the fitted curves by a short tubular model (eq S1) with the L value of 10 nm (blue curve), 20 nm (red curve), 50 nm (green curve), and 100 nm (purple curve), where the R_E and R_I values are fixed to 9.39 nm and 5.6 nm, respectively.