

## Supplementary Information

### Monte Carlo simulation of temperature-induced reversible morphological changes between sphere and vesicle formed by AB diblock copolymers

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**S1.** The simulation results obtained in larger simulation box,  $L=50$ .

**S2.** The repeated simulation results with different initial states.

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**S1: The simulation results obtained in larger simulation box,  $L=50$ .**

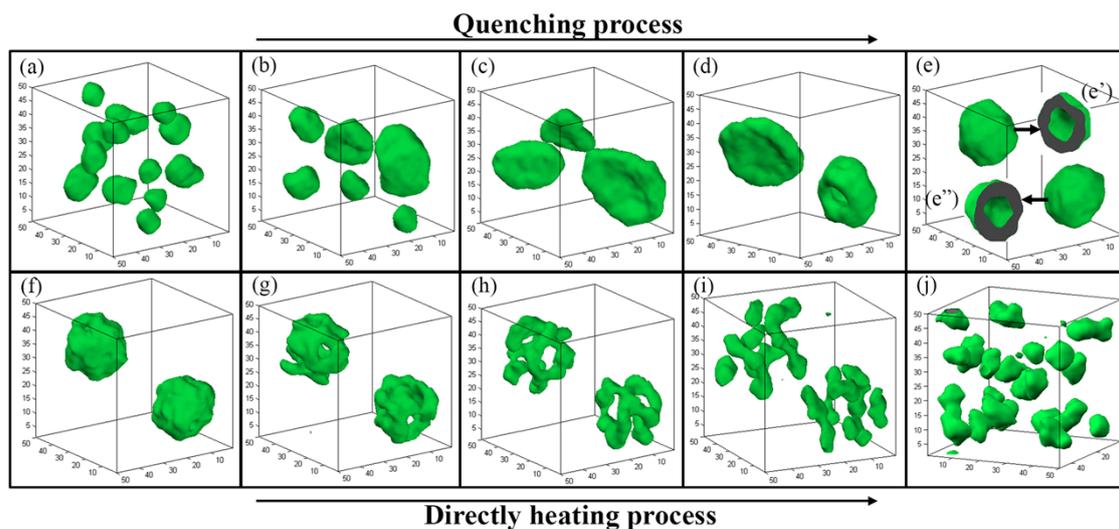


Figure S1. Snapshots at different stages showing the pathway of morphological change between sphere and vesicle under rapid temperature change rate (a)-(e) quenching process; (f)-(j) directly heating process. (a)  $1.0 \times 10^5$  MCS, (b)  $8.0 \times 10^5$  MCS, (c)  $2.5 \times 10^6$  MCS, (d)  $3.7 \times 10^6$  MCS, (e)  $4.8 \times 10^6$  MCS, (f) 250 MCS, (g) 1000 MCS, (h) 3000 MCS, (i)  $2.5 \times 10^4$  MCS, (j)  $4.0 \times 10^5$  MCS. For clarity, the cross sections of the vesicles are given in (e') and (e'').

**S2: The repeated simulation results with different initial states.**

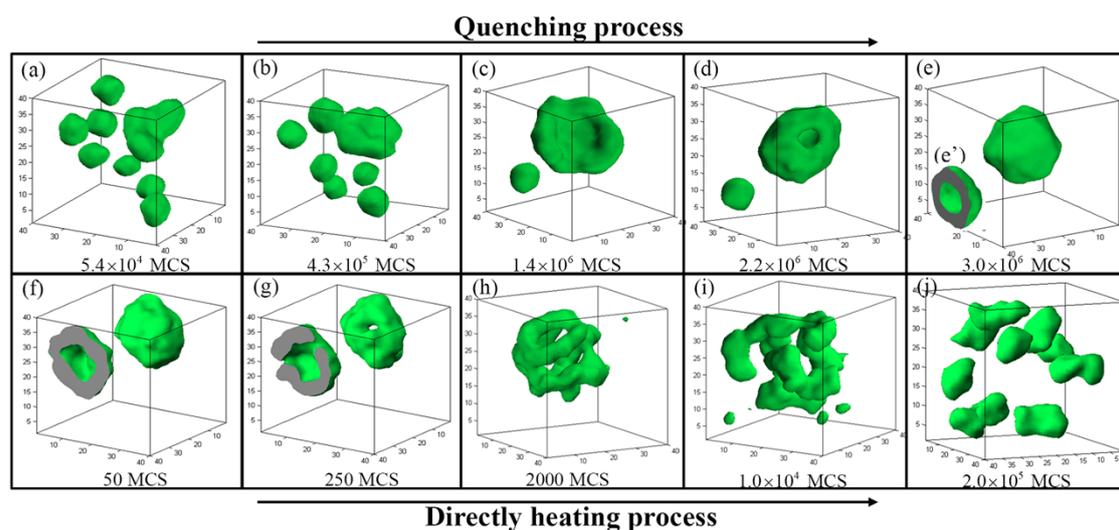


Figure S2. The pathways of morphological transition evolving from initial state 2 under rapid temperature change rate. (a)-(e) quenching process; (f)-(j) directly heating process. For clarity, the cross sections of the micelles are given in (e)', (f), (g).

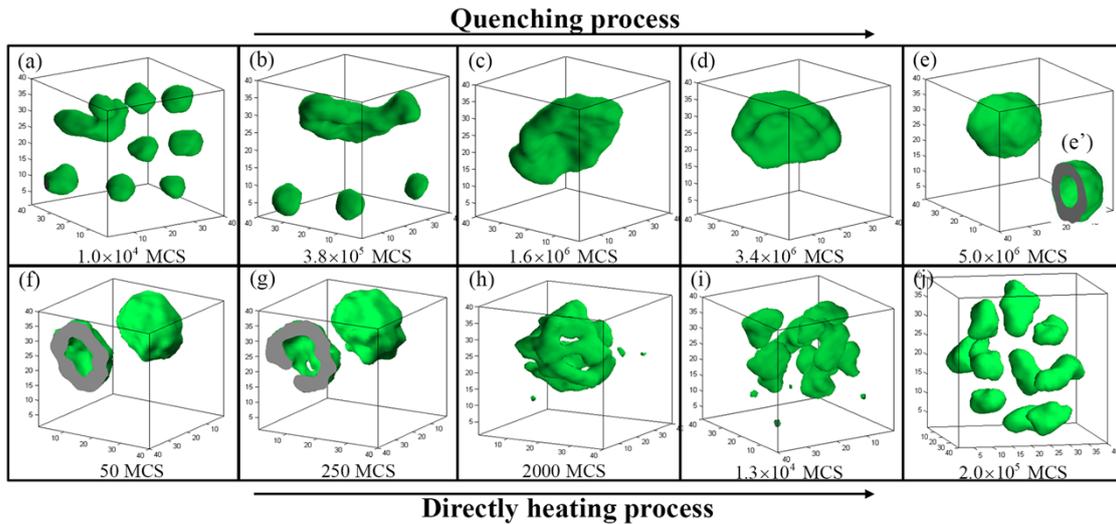


Figure S3. The pathways of morphological transition evolving from initial state 3 under rapid temperature change rate. (a)-(e) quenching process; (f)-(j) directly heating process. For clarity, the cross sections of the micelles are given in (e)', (f), (g).

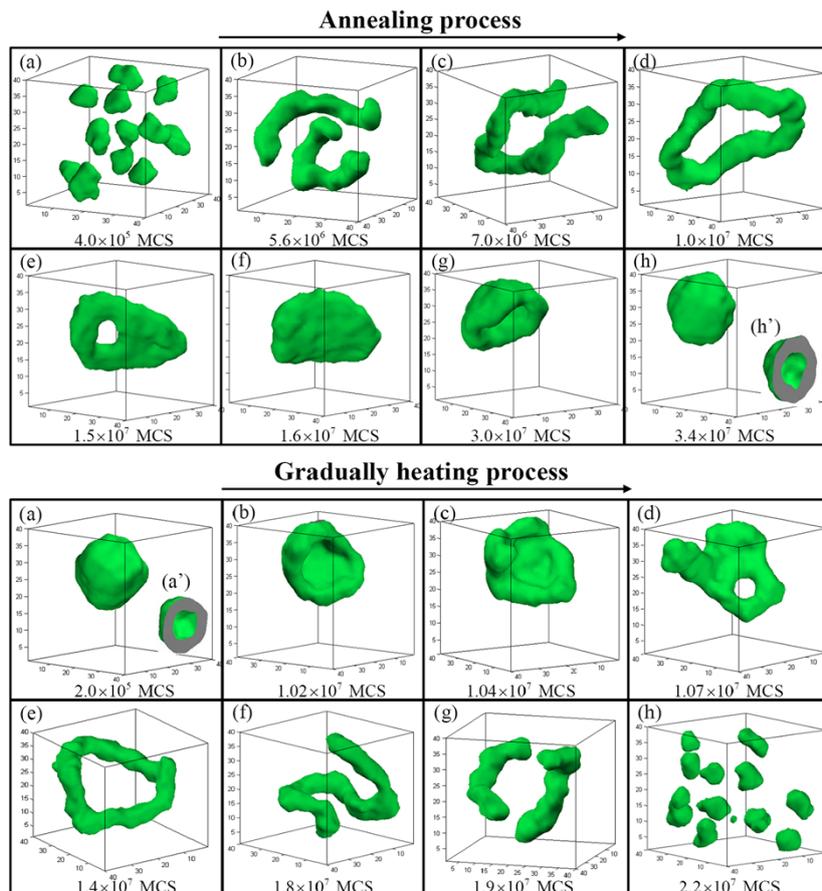


Figure S4. The pathways of morphological transition evolving from initial state 2 under slow temperature change rate. (a') and (h') are the cross sections of the corresponding vesicles.

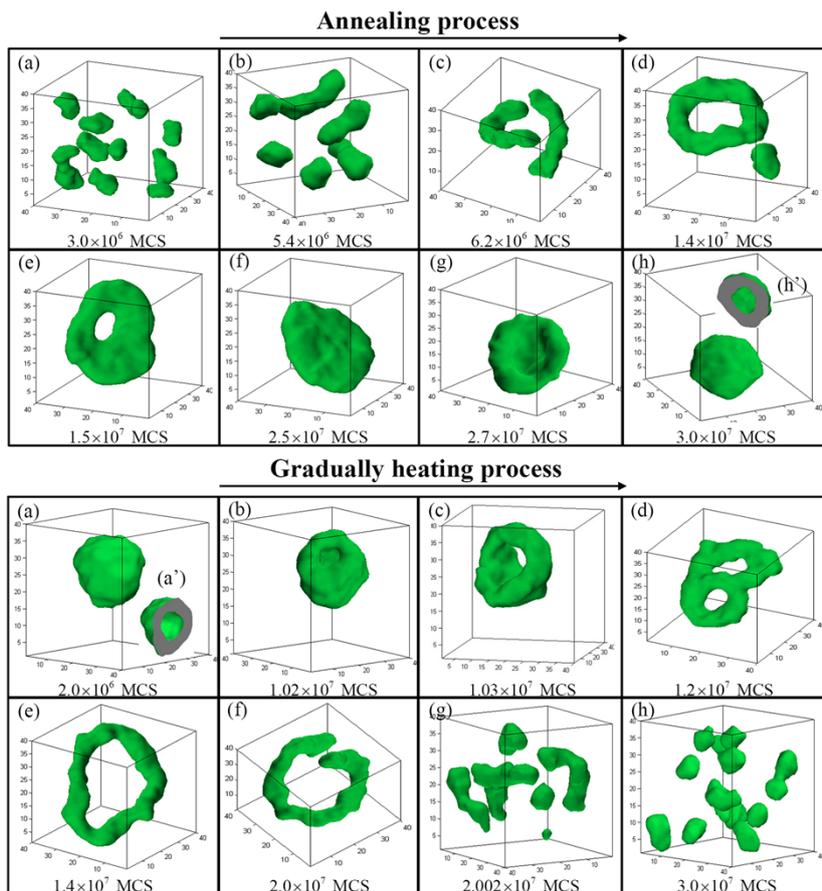


Figure S5. The pathways of morphological transition evolving from initial state 3 under slow temperature change rate. (a') and (h') are the cross sections of the corresponding vesicles.