

Obstacle-induced giant jammed aggregation of active semiflexible filaments Supplementary Information

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I. Supplemental figures

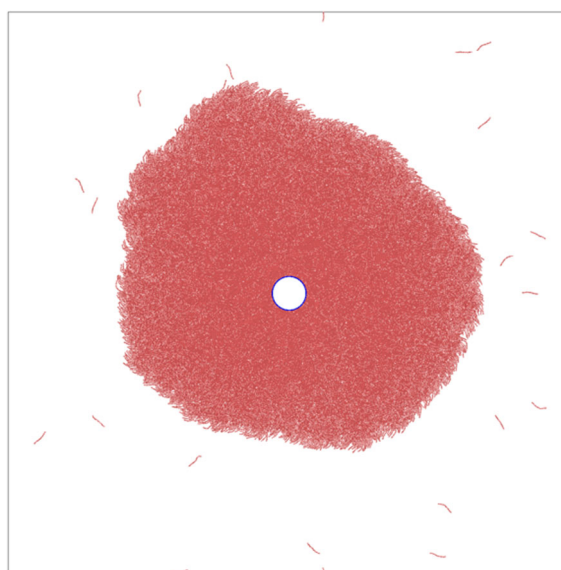


Fig. S1 Eventual assembling structure for large simulation box $500\sigma \times 500\sigma$ ($K_a = 20$, $F_a = 5$). The concentration is $\phi = 0.3$ ($n = 6364$ AP chains and totally 95460 chain beads).

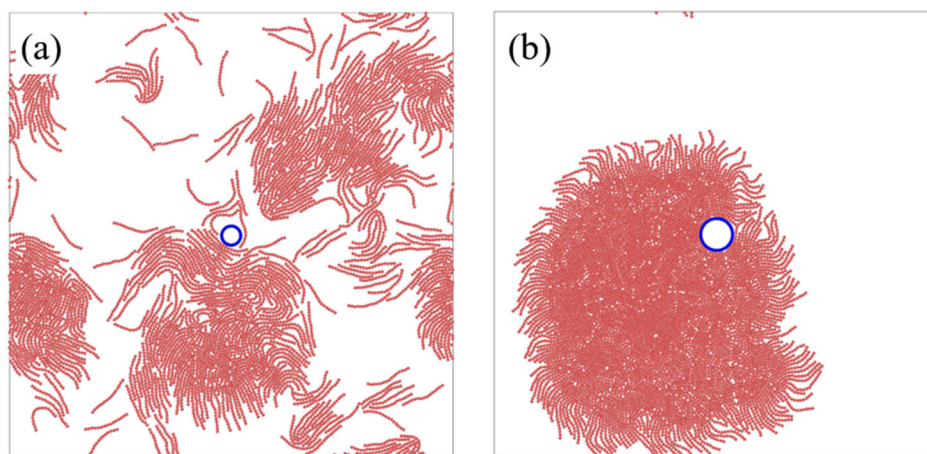


Fig. S2 Eventual assembling structure for various obstacle sizes ($K_a = 20$, $F_a = 5$). (a) $R = 3\sigma$; (b) $R = 5\sigma$.

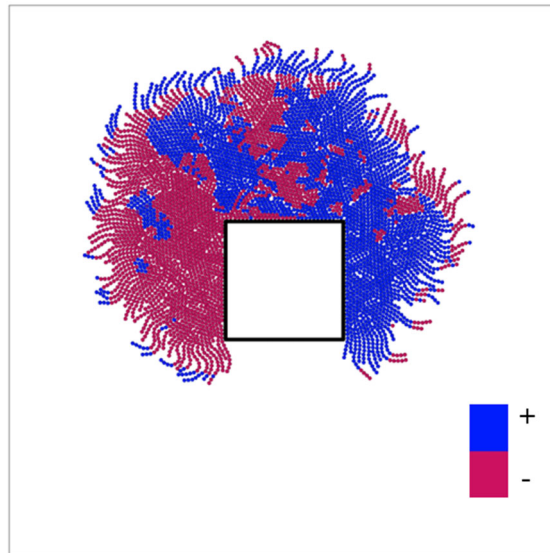


Fig. S3 Eventual assembling structure for a square obstacle of side length 30σ ($K_a = 20$, $F_a = 5$). The colors show the local chirality as in Fig. 1.

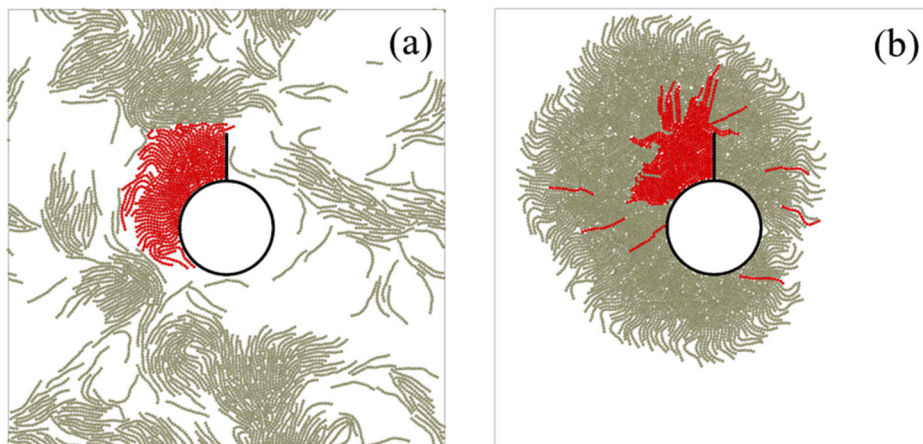


Fig. S4 Snapshots for a circular obstacle with a stick-like protrusion of length $L_p = 15\sigma$ ($K_a = 20$, $F_a = 5$). (a) The formation of the initial nucleus; (b) the eventual GJA.

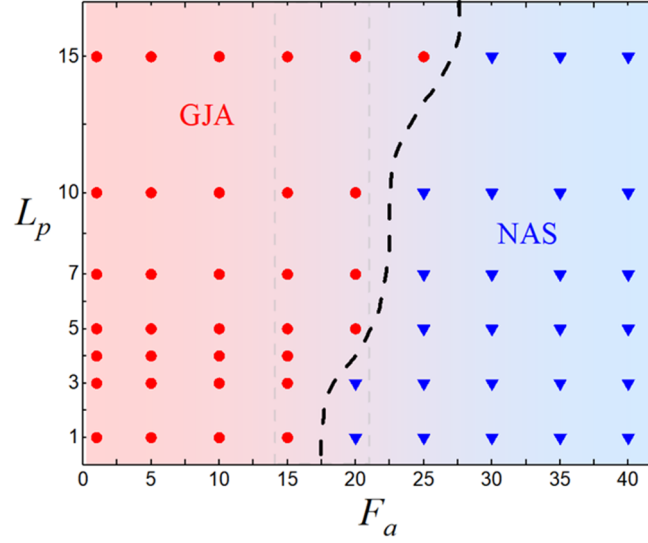


Fig. S5 Shift of the GJA-NAS transition boundary upon the length of the protrusion ($K_a = 20$).

II. Supplemental movies

Movie S1: Spirals ($K_a = 1$ and $F_a = 40$).

Movie S2: Transient vortex ($K_a = 8$ and $F_a = 1$).

Movie S3: Stationary GJA ($K_a = 30$ and $F_a = 15$). The colors show the local chirality as in Fig. 1.

Movie S4: Chiral GJA in rotation ($K_a = 10$ and $F_a = 1$). The colors show the local chirality as in Fig. 1.

Movie S5: Nucleation: A single drifting AP cluster collides head-on with the obstacle and dominates in the formation of a hedgehog-like nucleus ($K_a = 20$, $F_a = 5$ and $\phi = 0.2$).

Movie S6: Nucleation: Several small AP clusters collide onto the obstacle and merge into a nucleus ($K_a = 20$, $F_a = 5$ and $\phi = 0.2$).

Movie S7: Nucleation: Big AP clusters collide and slide on the surface of the obstacle and generate the nucleus accidentally ($K_a = 15$, $F_a = 5$ and $\phi = 0.3$).

Movie S8: AP aggregate slides off the square surface ($K_a = 20$, $F_a = 5$ and $\phi = 0.2$).

Movie S9: Formation of jammed aggregation of APs without the obstacle ($K_a = 35$, $F_a = 17$ and $\phi = 0.3$).