Supporting Information

Understanding the emergence of collective motion of microtubules driven by kinesins: role of concentration of microtubules and depletion force

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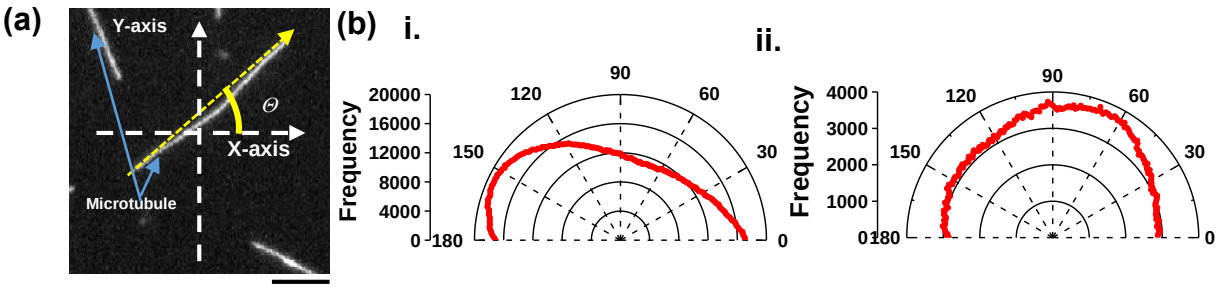
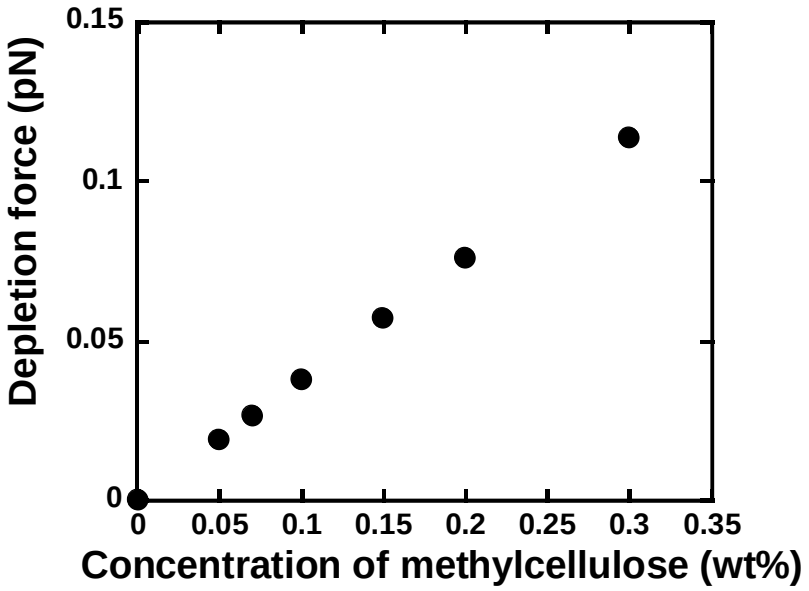
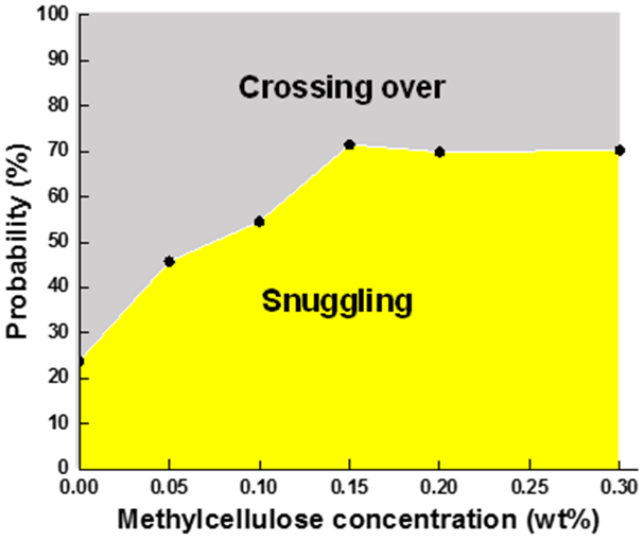


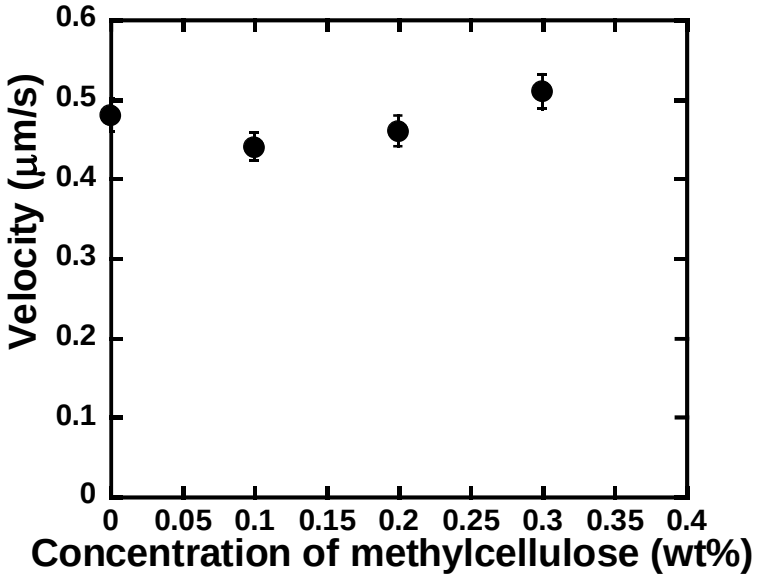
Supporting Figure 1: (a) Schematic representation of analysis of microtubule orientation angle Θ. Yellow arrow represents moving direction of microtubules. As shown here, the orientation angle was measured with respect to the X-axis. Scale bar: 5 μm. (b) Circular histogram of orientation angle of of microtubules in absence of methylcellulose at (i) 0 min and (ii) 120 min after ATP addition. The dispersion of orientation angle in circular histogram indicates randomness in moving direction of MT. Here the concentration of microtubules was 15.0 μM



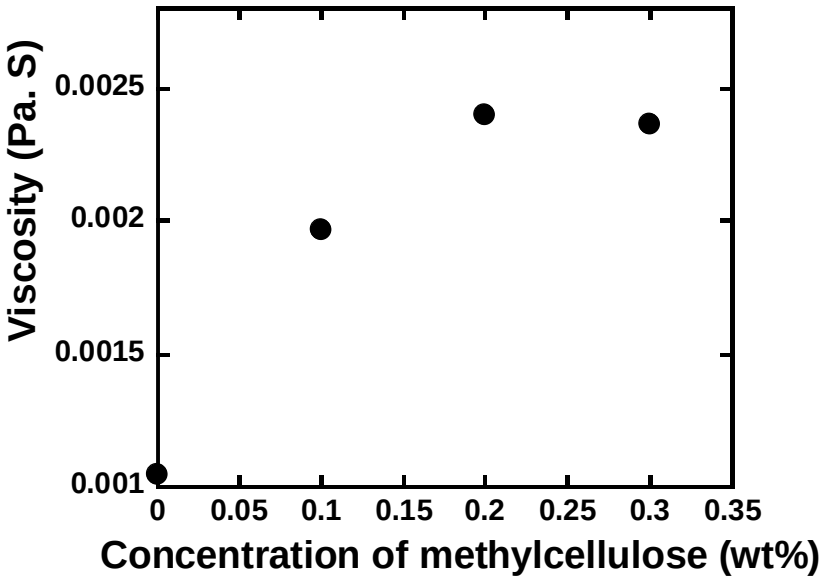
Supporting Figure 2: Relationship between depletion force and concentration of methylcellulose.



Supporting Figure 3: Effect of methylcellulose concentration on the gliding behavior of microtubules. High concentration of methylcellulose increased the probability of snuggling event.



Supporting Figure 4: Effect of methylcellulose concentration on the velocity of gliding microtubules.



Supporting Figure 5: Relationship between buffer viscosity and concentration of methylcellulose.

Caption for the Supporting movie:

Supporting movie 1: Local streams generated by collectively moving microtubules in the presence of methycellulose. Here the concentration of microtubules and methylcellulose were 10 μM and 0.1 wt% respectively.