Electronic Supplementary Material (ESI) for Soft Matter.

Supplementary Information for

Colloidal Transport within Nematic Liquid Crystals with Arrays of Obstacles

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1. Description of supplementary videos.

i) **SV1_Alpha=0.avi** depicts a colloid descending an array at $\alpha = 0$. The video plays at a rate 56x real time. The trajectory of the colloid is shown in red for clarity.

ii) **SV2_Alpha=18degrees.avi** depicts three colloids descending an array at $\alpha = 18^o$. The video plays at a rate 35x real time. The trajectories of the colloids are shown in red, blue, and green for clarity.

iii) **SV3_Alpha=32degrees.avi** depicts three colloids descending an array at $\alpha = 32^o$. The video plays at a rate 35x real time. The trajectories of the colloids are shown in red for clarity.

2. Examples of colloid trajectories past isolated posts.

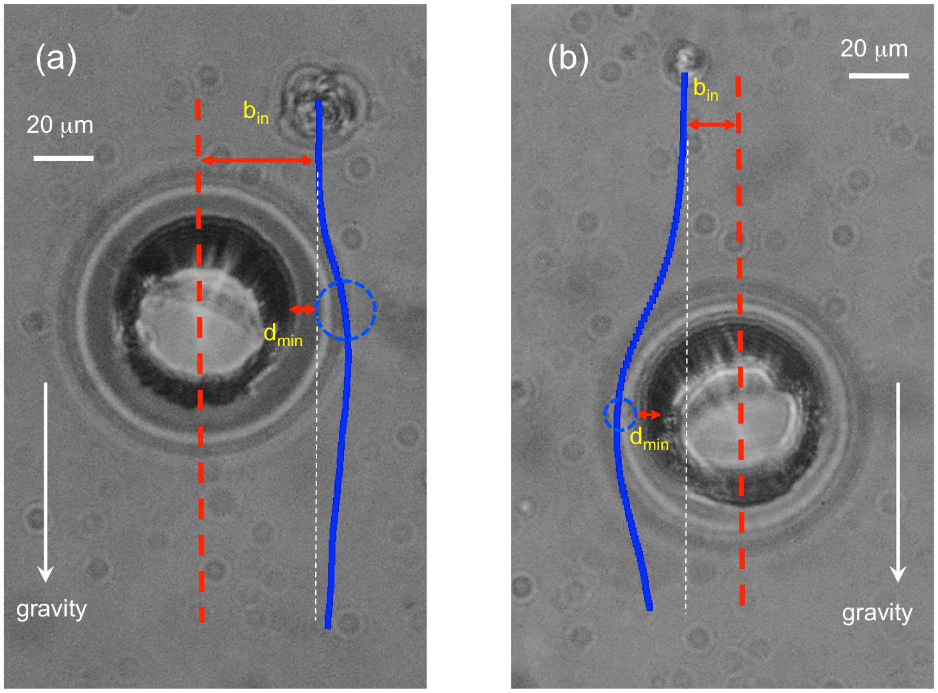

Figure S1: Micrographs of spheres with radii (a) 10.0 μm and (b) 5.2 μm and planer surface anchoring translating in 5CB under the force of gravity past a cylindrical post with homeotropic anchoring. The paths of the spheres' centers, shown by the solid blue lines, lack symmetry about the mid-height of the posts, indicating the presence of a repulsive interaction mediated by the nematic.

3. Examples of height-dependent colloid velocity in nematic at α = 0.

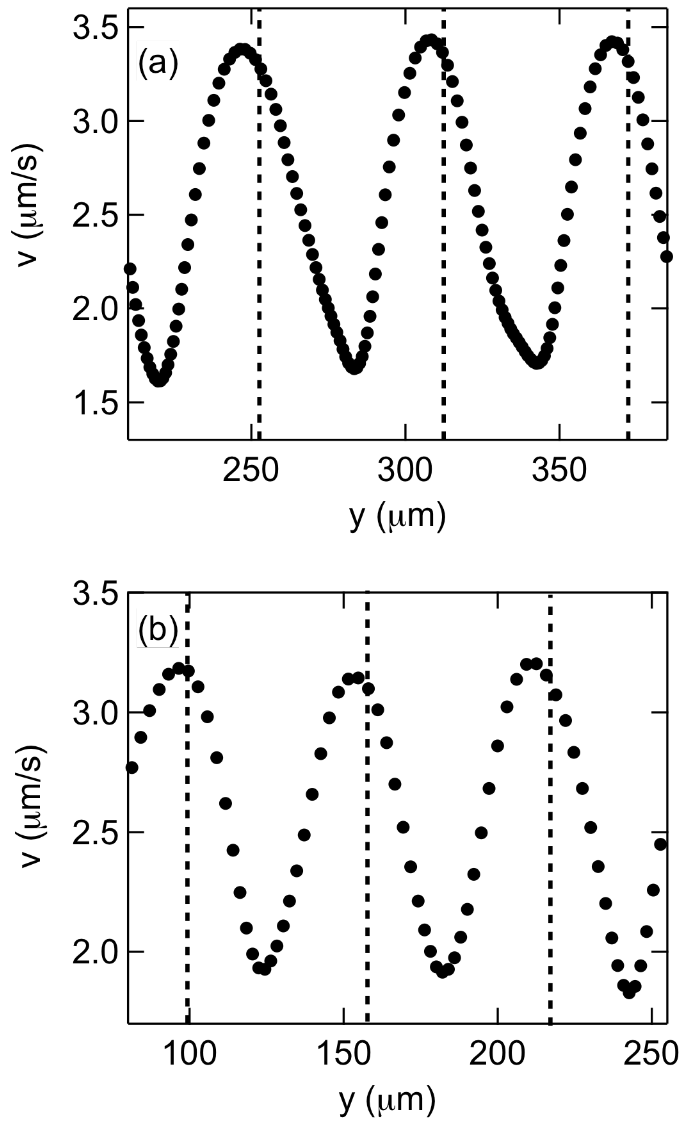

Figure S2: Velocity of colloidal spheres with radii (a) 7.3 µm and (b) 6.3 µm as a function of height *y* in nematic 5CB within post arrays like those described in the manuscript. Increasing *y* is taken to be downward, and the origin of *y* is set as the particle position when we started to record the motion. The vertical dashed lines indicate the heights at which the centers of the spheres pass between nearest neighbor posts (*h* = 0 in each unit cell).

4. Velocity modulation at $\alpha = 0$ in isotropic solvent.

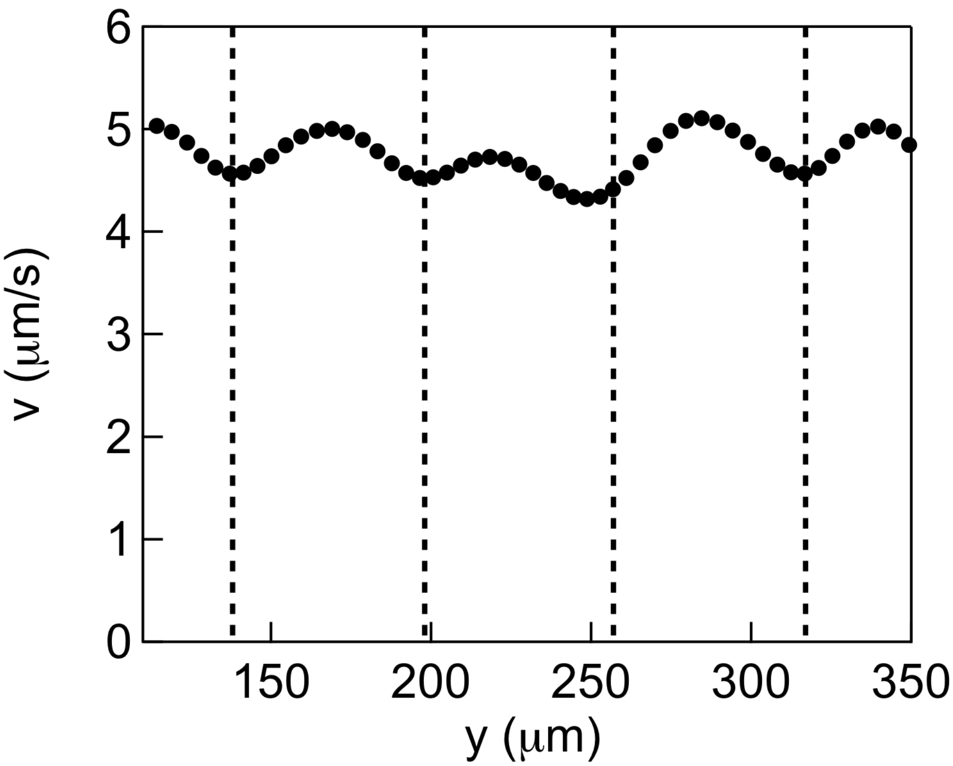

Figure S3: Velocity of a silica sphere as a function of its height y in an obstacle array containing water. Increasing y is taken to be downward, and the origin of y is set as the particle position when we started to record the motion. Included in the plot is the velocity over approximately four periods of the array after the motion was stable. The vertical dashed lines indicate the heights at which the center of the sphere passes between nearest neighbor posts ($h = 0$ in each unit cell).