1 Supplementary Movies

- S1: This is a simulation movie for large rod length with $\ell = 4.5$ mm, $\phi = 0.45$ when system remains in isotropic state.
- S2: This is a simulation movie for $\ell = 4.5$ mm, $\phi = 0.75$ when system gets ordered along x direction.
- S3: This is a simulation movie for small rod length with $\ell = 2.5$ mm, $\phi = 0.60$ when system remains in isotropic state
- S4: This is a simulation movie for $\ell = 2.5$ mm, $\phi = 0.85$.
- S5: This is a simulation movie for large rod length and high area fraction with $\ell = 4.5$ mm, $\phi = 0.85$ when the system forms is in the layered phase.
- S6: Trajectories of single rod at $\phi = 0.65$ and $\phi = 0.85$ for $\ell = 2.5$ mm.
- S7: This is a simulation movie for $\ell = 3.0$ mm, $\phi = 0.85$; the motile defects are clearly visible.

2 Steady state configuration of $\ell = 3.5$ mm, $\phi = 0.85$

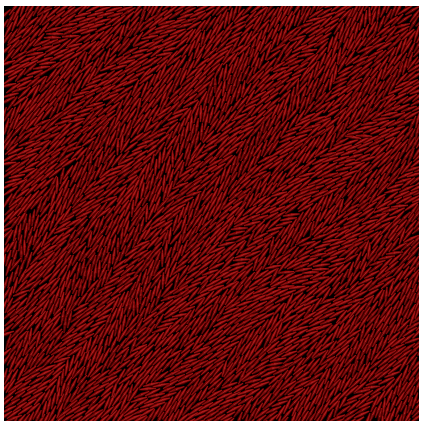

Figure 1: Steady state configuration of the rods for $\ell = 3.5$ mm at $\phi = 0.85$; rods are aligned in a direction other than x or y axes.

3 $G_2(\mathbf{r})$ vs r for different gap values in base and lid (w)

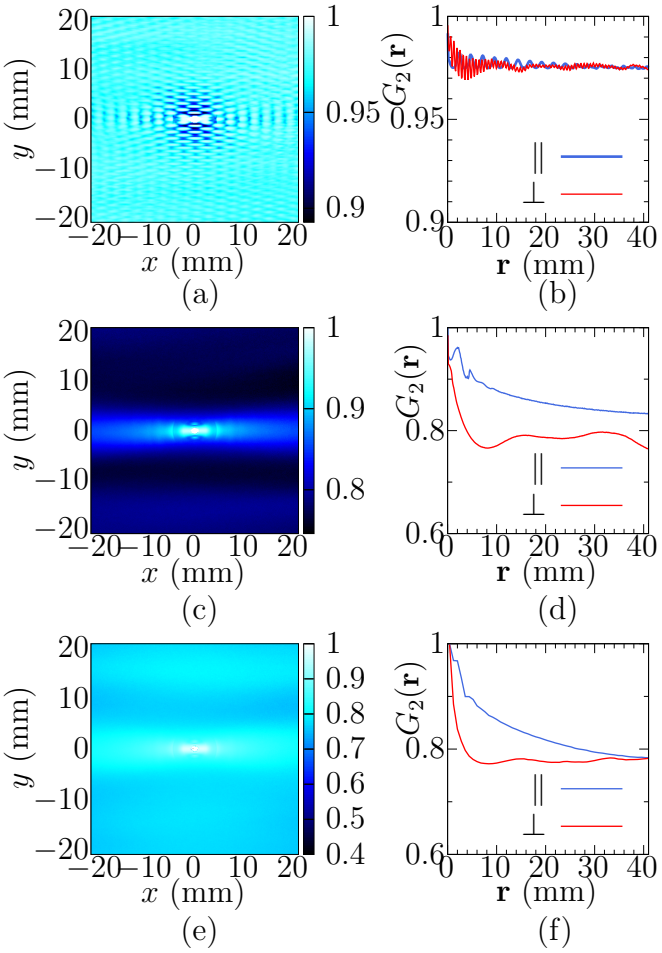

Figure 2: Nematic order parameter correlation function $G_2(\mathbf{r})$ for $\ell = 4.5$ mm, $\phi = 0.80$ for different w values. (a) Heat map and (b) $G_2(\mathbf{r})$ vs r parallel and perpendicular to alignment for $w = 0.90$ mm. (c) Heat map and (d) $G_2(\mathbf{r})$ vs r parallel and perpendicular to alignment for $w = 1.4$ mm . (e) Heat map and (f) $G_2(\mathbf{r})$ vs r along and normal to the alignment direction for $w = 1.6$.