Supplementary Information for "Collective dynamics of active circle-swimming Lennard-Jones particles"

Bhadra Hrishikesh,*[a] Ethayaraja Mani[a‡]

[a] *Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai - 600 036, Tamil Nadu, India;* [‡]*E-mail : ethaya@iitm.ac.in*

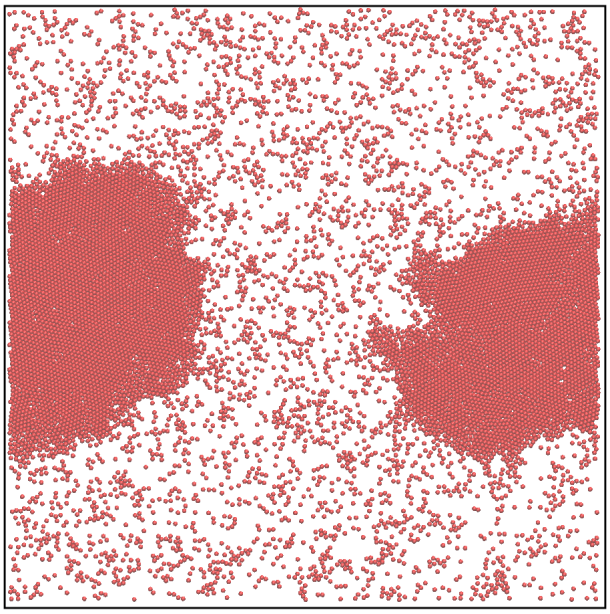

Figure S1: Representative configuration of the system for $Pe = 140$, $\omega^* = 0$, $\epsilon^* = 3$ and $N = 10000$.

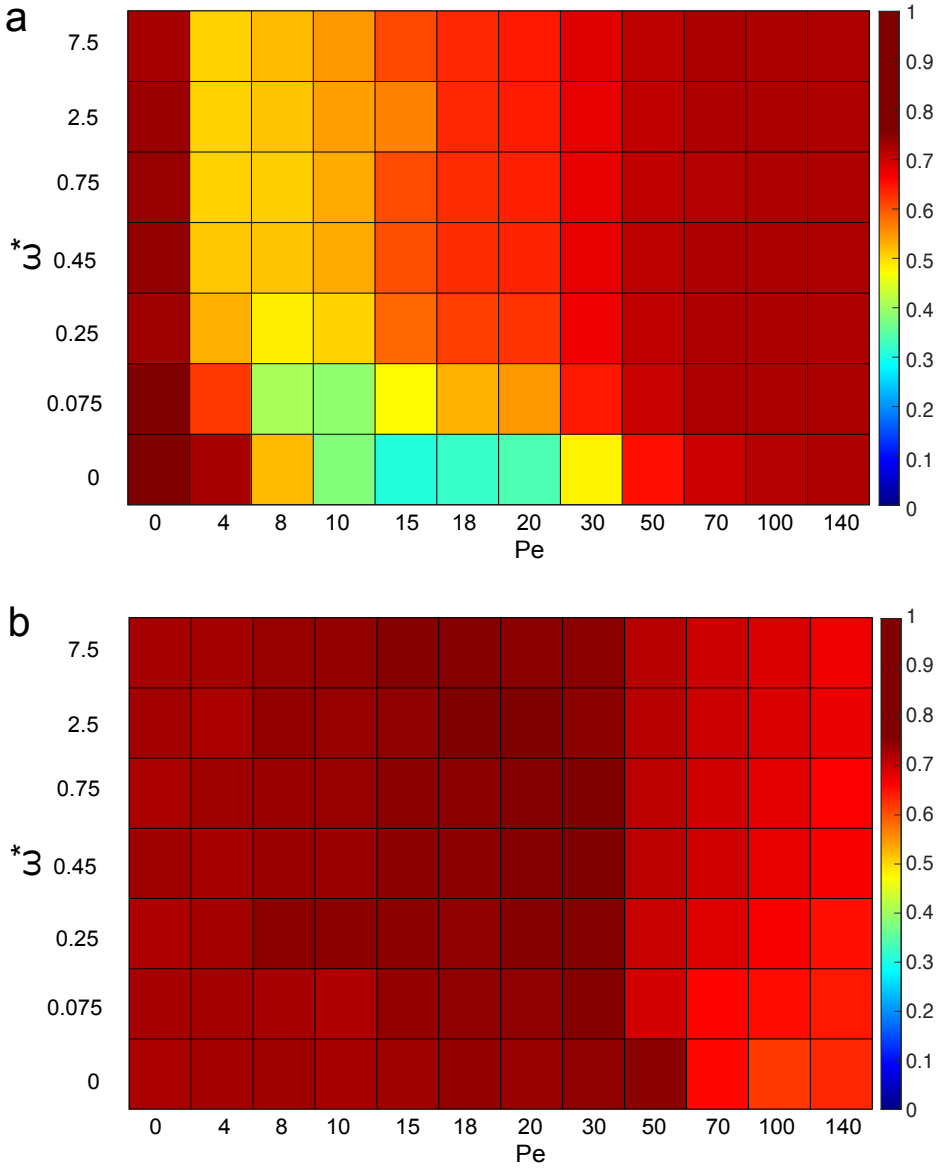

Figure S2: Color map of f_c in the (ω^*, Pe) plane for a) $\epsilon^* = 3$ and b) $\epsilon^* = 25$

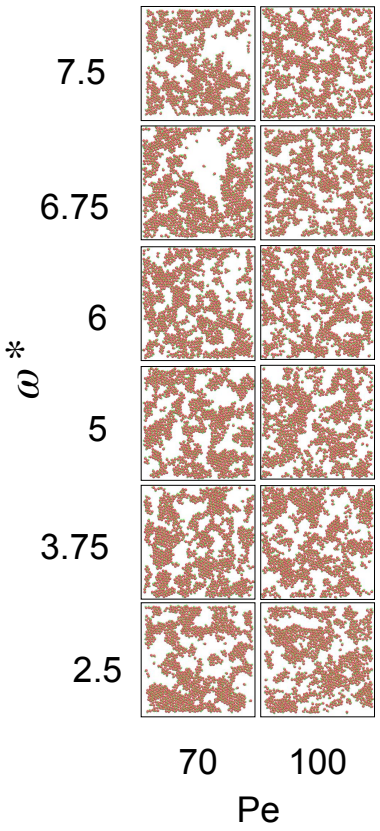

Figure S3: Representative configurations of the system at $\epsilon^* = 25$ for $Pe = 70$ and $Pe = 100$ and different ω^* values. Since the re-entrant phase cluster morphology is forming a percolated cluster (than a compact cluster at low ω^*), it is not discernible on a large scale.

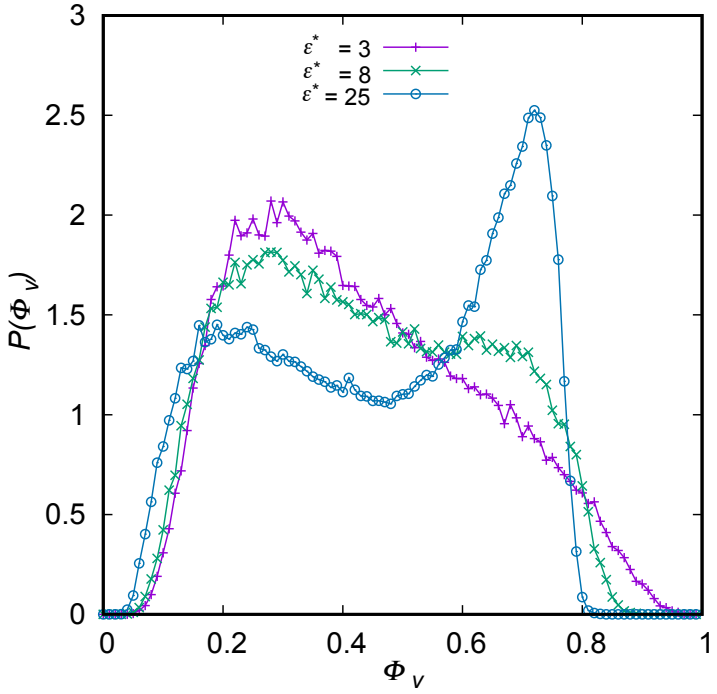

Figure S4: Probability distribution for $\omega^* = 7.5$ and $Pe = 140$ for different ϵ^* values.