# When bacteria play marbles

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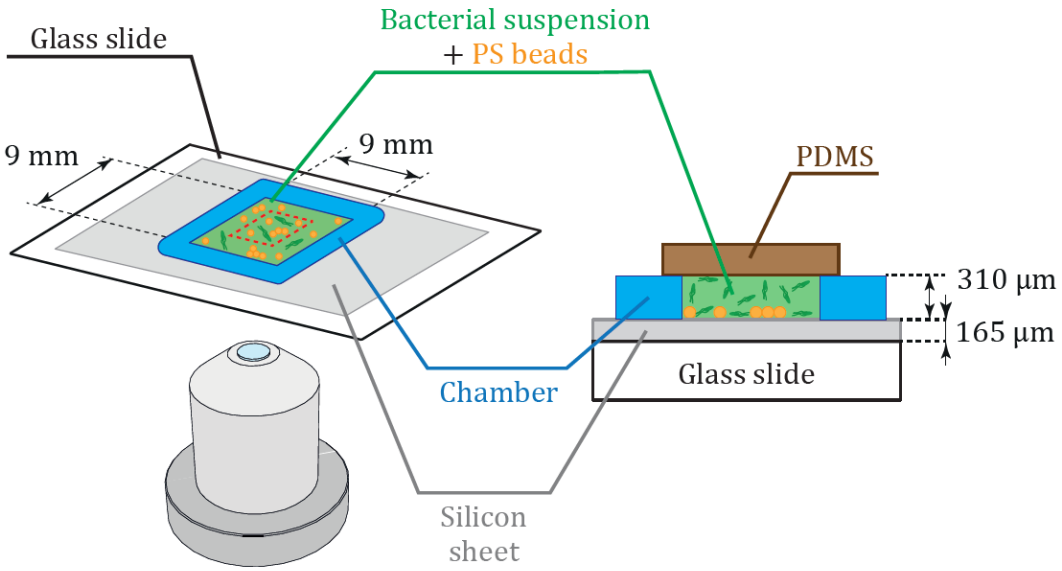
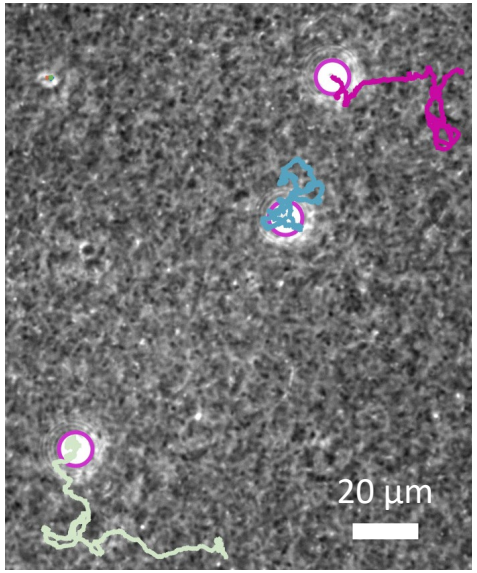
Rencontres du Non-Linéaire 2022

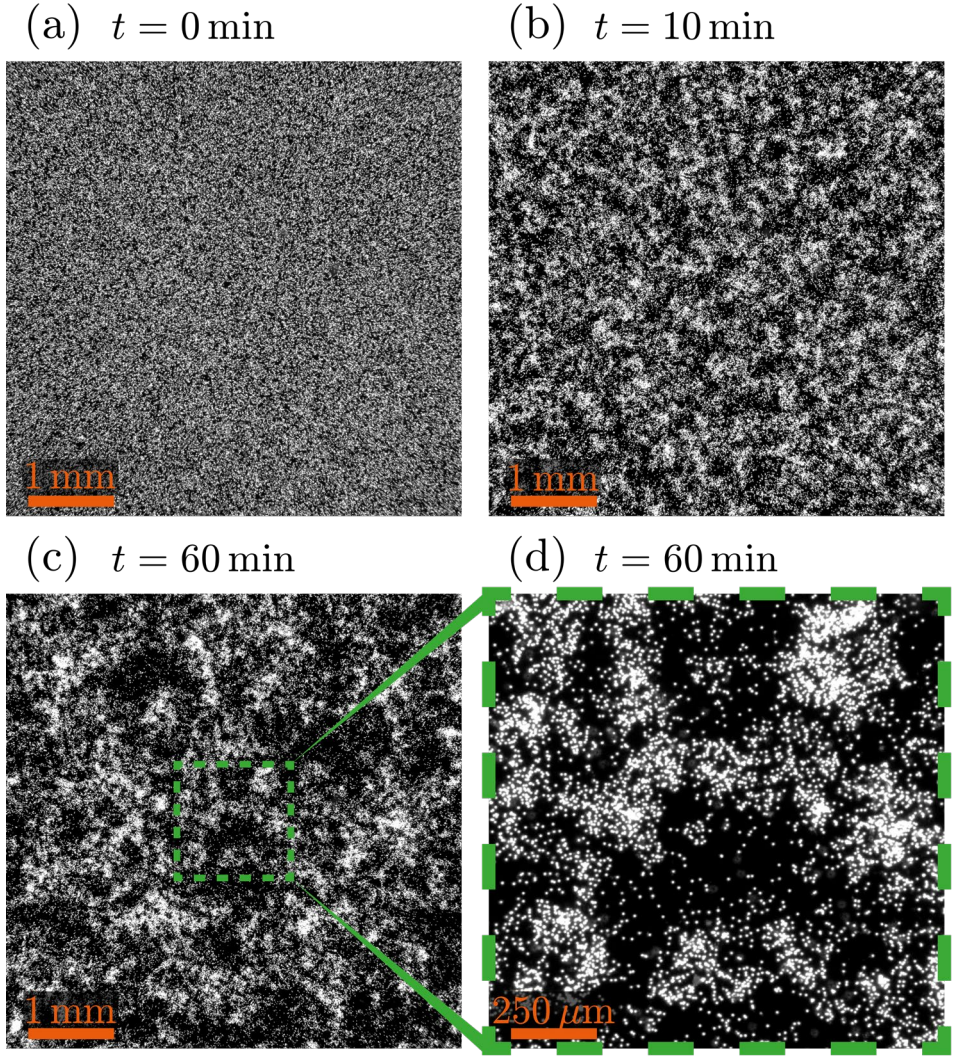
## Experimental setup




## Effective diffusion




## Dynamic clustering of the beads



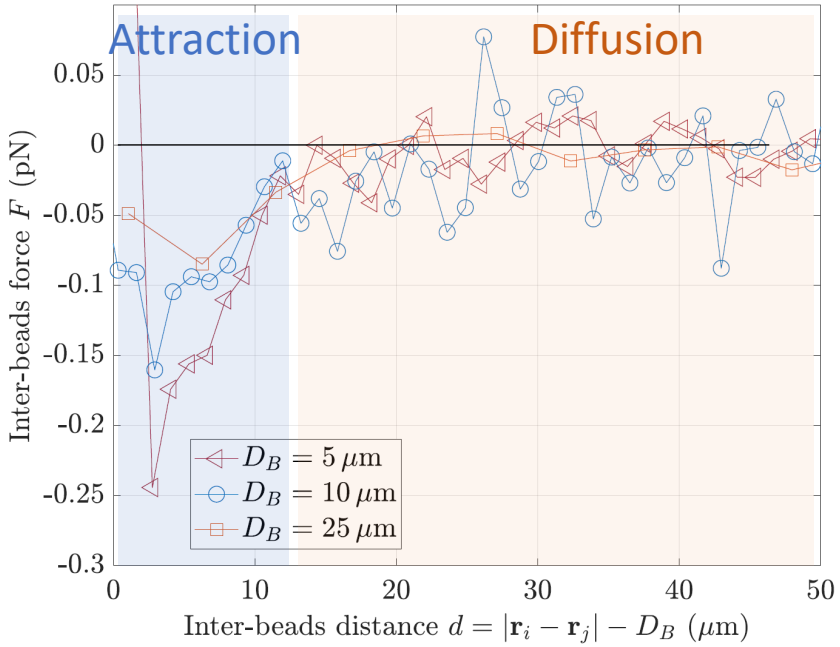

- Bead diameter: $D_B = 2, 5, 10, 25, 40$ µm
- Bead surface fraction: $\Phi_B = 4.10^{-4} - 0.7$
- Bead density: $\rho_B = 1.05$ kg m$^{-3}$

Fluorescent polystyrene beads

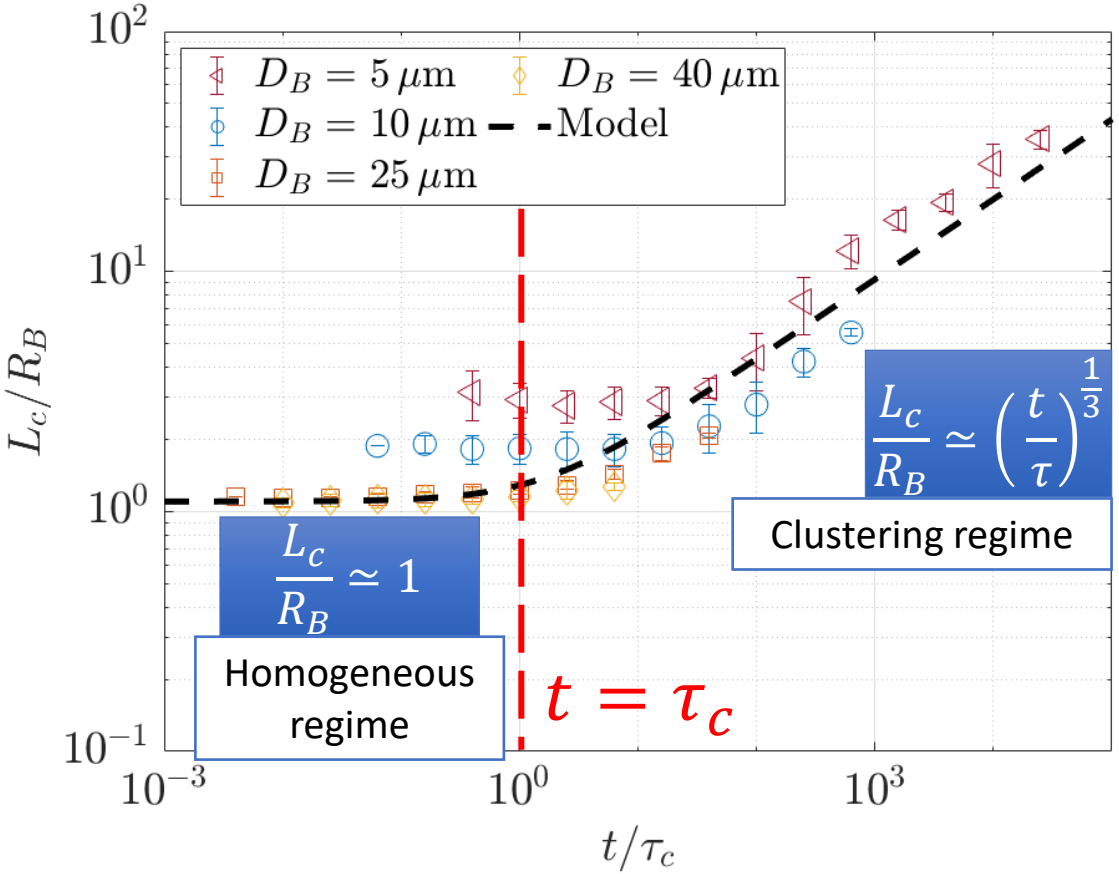
- *B. contaminans* concentration: OD $= 1, 5$

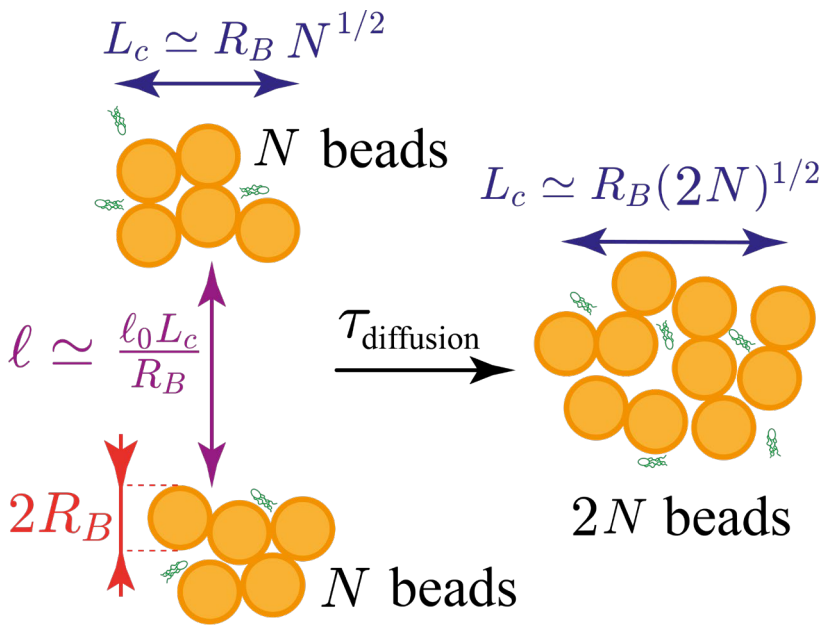
Motile bacteria

Short-range attractive force between beads




Non-dimensionalised temporal evolution of the cluster size




Coarsening model

$$\frac{L_c}{R_B} = \beta\left(1 + \alpha\frac{\Phi_B \mu_B}{R_B^2}t\right)^{\frac{1}{3}}$$

$1/\tau_c$

with $\tau_c$ the characteristic clustering time