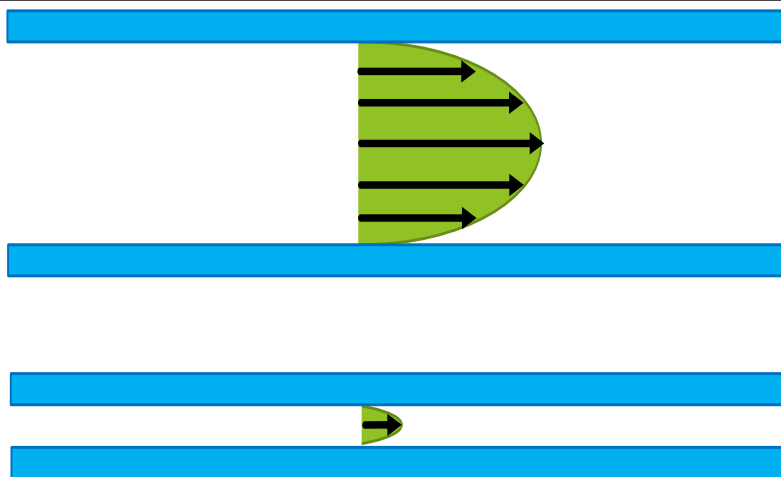


# Computing polymer diffusiophoretic mobilites

Simón Ramírez-Hinestrosa  
Supervisor Prof Daan Frenkel



Transport of colloids, polymers and biomolecules by means of **thermodynamic forces** (i.e chemical potential and temperature gradients or electric fields)

**"Phoresis"** something that is carried or transported.

## From the origin of life

Thermophoretic migration of vesicles depends on mean temperature and head group chemistry

Emma L. Talbot<sup>1</sup>, Jurij Kotar<sup>1</sup>, Lucia Parolini<sup>1</sup>, Lorenzo Di Michele<sup>1</sup> & Pietro Cicuta<sup>1</sup>

Thermophoretic accumulation of lipids and nucleic acids in thermal vents has even been proposed as **a key step in the origin of life**, favouring the self-assembly of various essential components of life: nucleic acids<sup>13</sup> and protocells<sup>14</sup>.

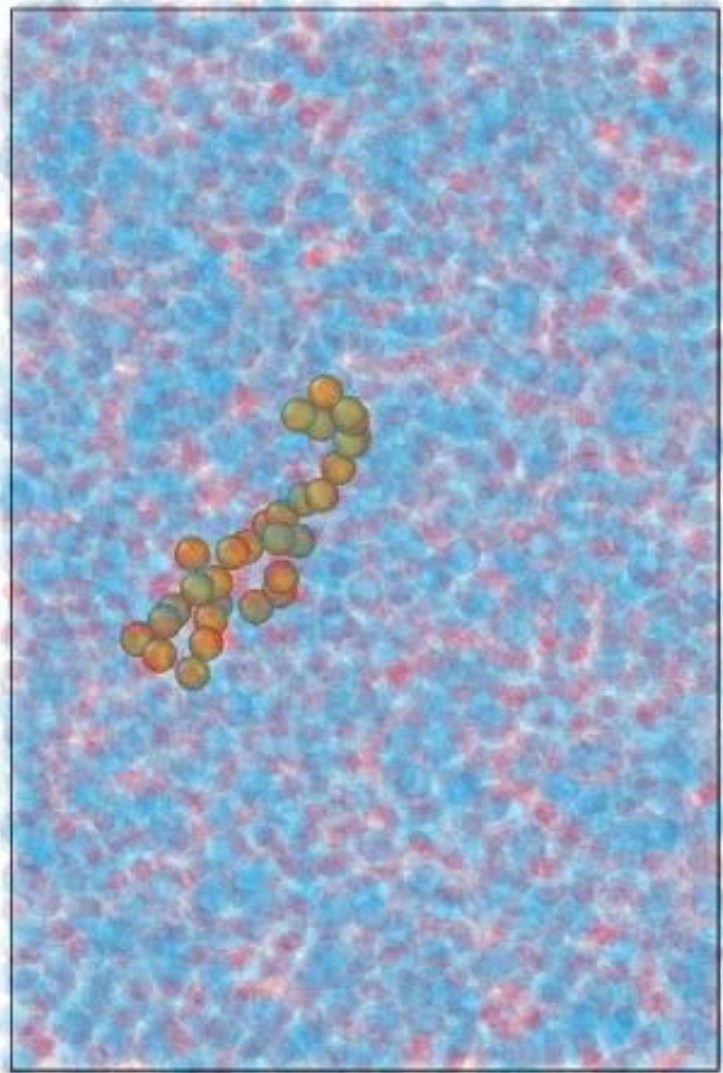
## To ...

“ We can design a better wash-rinse cycle for optimal cleaning  
Sangwoo Shin, University of Hawaii

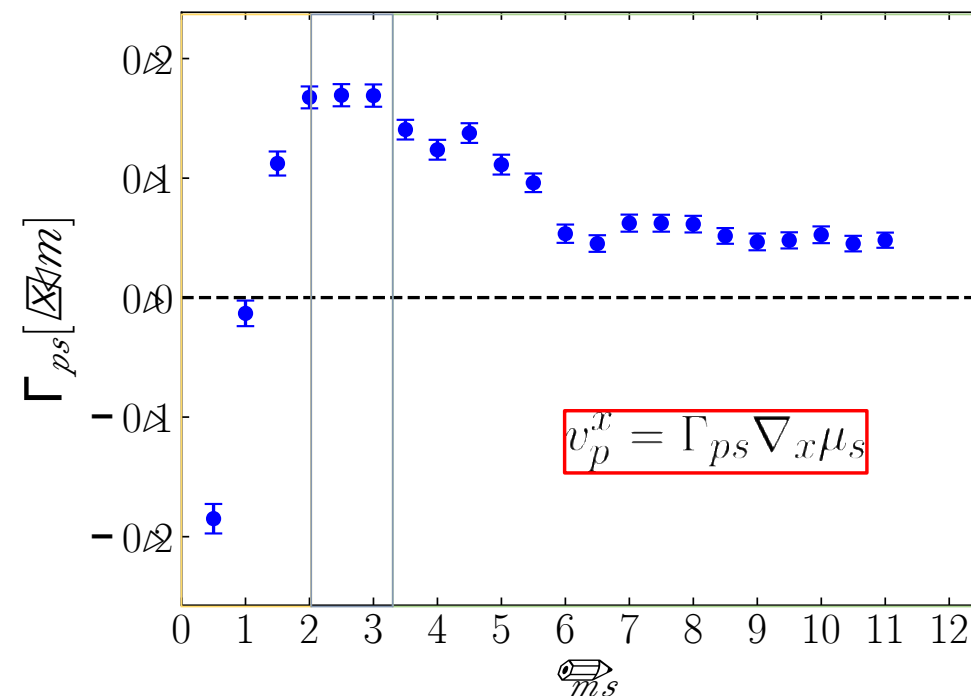
**Cleaning by Surfactant Gradients: Particulate Removal from Porous Materials and the Significance of Rinsing in Laundry Detergency**

Sangwoo Shin,<sup>1,\*</sup> Patrick B. Warren,<sup>2,†</sup> and Howard A. Stone<sup>3,‡</sup>

## Non-Equilibrium Molecular Dynamics



## Results



- Non-monotonic relation between the mobility and strength polymer-solute interaction.
- Weak dependence of the mobility on the polymer length.
- Hydrodynamic flow through polymer is less screened than pressure driven flow.