Supplementary Material (ESI) for Soft Matter


# Supplementary Information to Osmotically induced deformation of capsid-like icosahedral vesicles

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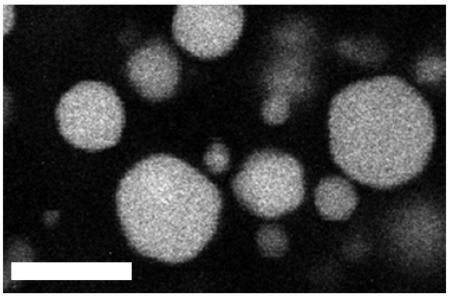
## Slow sphere-to-icosahedron transition upon ageing



Confocal microscopy of vesicles with Rhodamine 6G encapsulated, one month after preparation. The bar is 10 µm. The icosahedral shape is slowly recovered as the HCl encapsulated inside the vesicles leaks out.

## Parameters for the fit of SANS data (three tables)

**Table 1. Fit for vesicles with no added solute**

| | $t_i$ (Å) | $\rho_i$ (Å$^{-2}$) | $\Sigma$ (cm$^{-1}$) |
|---|---|---|---|
| Tails ($i$ = 2) | 18.1 | $4.53 \cdot 10^{-6}$ | 8340 |
| Heads ($i$ = 1) | 22.5 | $1.44 \cdot 10^{-6}$ | |
| $D_2O$ ($i$ = 0) | | $6.33 \cdot 10^{-6}$ | |

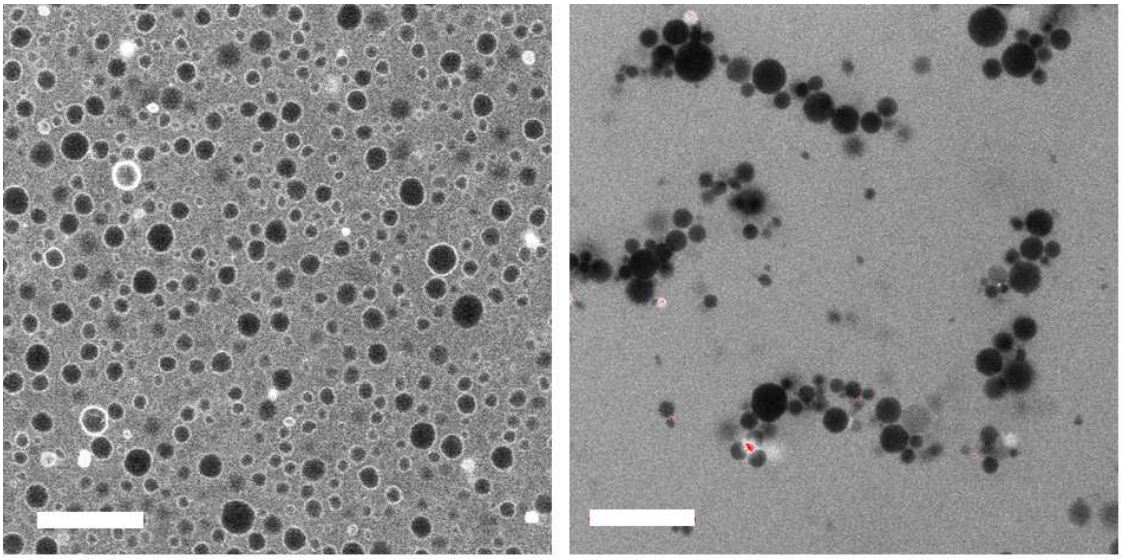
**Table 2. Fit for vesicles incubated three days in glucose**

| Glucose concentration (mM) | $\rho_0$ (Å$^{-2}$) | $\Sigma$ (cm$^{-1}$) | $D$ (Å) | $\phi$ |
|---|---|---|---|---|
| 3.9 | $6.34 \cdot 10^{-6}$ | 8580 | N/A | 0 |
| 9.7 | $6.34 \cdot 10^{-6}$ | 8470 | 201 | 0.38 |
| 19.6 | $6.34 \cdot 10^{-6}$ | 8240 | 126 | 0.59 |
| 197.0 | $6.38 \cdot 10^{-6}$ | 6550 | 27 | 0.57 |
| 501.0 | $6.43 \cdot 10^{-6}$ | 5240 | 9 | 0.60 |

**Table 3. Fit for vesicles incubated three days in NaCl**

| NaCl concentration (mM) | $\rho_0$ (Å$^{-2}$) | $\Sigma$ (cm$^{-1}$) | $D$ (Å) | $\phi$ |
|---|---|---|---|---|
| 2.0 | $6.34 \cdot 10^{-6}$ | 7710 | N/A | 0 |
| 4.9 | $6.34 \cdot 10^{-6}$ | 8260 | 196 | 0.38 |
| 9.8 | $6.34 \cdot 10^{-6}$ | 8110 | 131 | 0.55 |
| 98.1 | $6.35 \cdot 10^{-6}$ | 7450 | 88 | 0.17 |

**Destruction of vesicles upon encapsulation of high glucose concentrations**



Confocal microscopy of vesicles encapsulating glucose, stained with Oregon Green 488 5% vol of saturated solution. Left: prepared in glucose 40 mM. Right: in glucose 80 mM. Less vesicles are recovered in the latter case, indicating bilayer disruption under outwards osmotic pressure.