

Manipulation of vesicle morphology by quaternary ammonium cationic surfactants

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Self-assembly of nanomaterials strongly depends on interparticle interactions, particle size distribution and particle shape.¹ The ability to manipulate interparticle interactions of supramolecular aggregates, such as vesicles, provides a powerful tool for controlling their assembly into shapes with interesting topology.

To investigate the morphological diversity available to supramolecular aggregates, a range of cationic surfactants with small structural modifications were added to spherical lipid vesicles to disrupt their packing behaviour. Proton nuclear magnetic resonance spectroscopy and electron microscopy were used to examine structural changes in the vesicles caused by both lytic and sublytic concentrations of the surfactants. This poster will show that small changes in the structure of the surfactant can induce significant changes in vesicle morphology (Fig. 1).

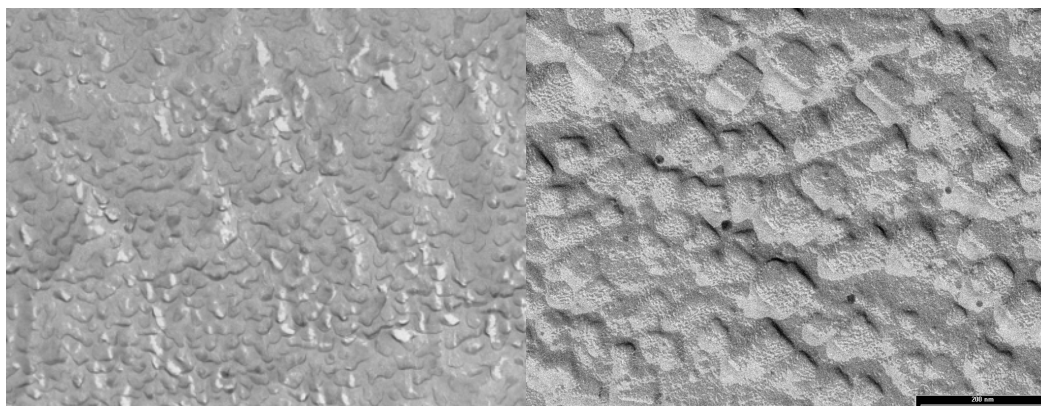


Figure 1. Electron micrographs of aggregates exhibiting globular and cubic structure caused by two closely related cationic surfactants.

¹ Jana, N. R. (2004), Shape Effect in Nanoparticle Self-Assembly. *Angewandte Chemie International Edition*, 43: 1536–1540.