

## Supplemental information: Attractive interactions between colloids at the oil-water interface

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### I. DOUBLET PARTICLE CHARACTERIZATION

Doublet particles are characterized using scanning electron microscopy (SEM). Figure ?? shows one such particle. The particles consist of two fused spheres with diameters  $3.9\mu\text{m}$  and a center-to-center separation of approximately  $2.2\mu\text{m}$ .

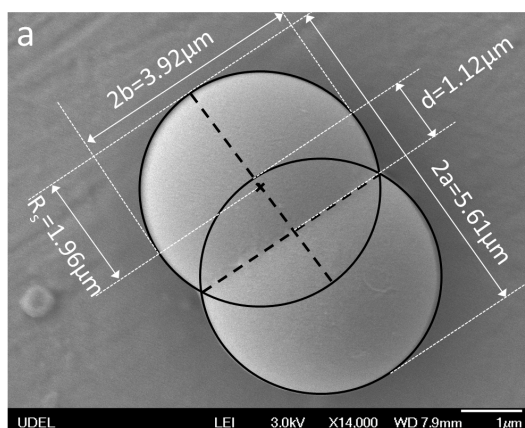


FIG. 1.  
SEM image of a doublet particle.

### II. INTERFACIAL TENSION AND THREE-PHASE CONTACT ANGLE

The interfacial tension of the oil-water interface  $\gamma_{OW}$  is measured using a pendant drop [1, 2] in the presence of a monovalent salt (NaCl) and an anionic surfactant (sodium dodecyl sulfate, SDS, Sigma Aldrich) in the aqueous phase, or a nonionic surfactant (sorbitan monooleate, SPAN80, Spectrum Chemicals) in the oil phase. The three-phase contact angle  $\theta_t$  formed by a small water drop placed on a thin polystyrene film in decane is measured using a goniometer. Although this leads to different absolute values of the contact angle compared to direct measurements [3], the measurements confirm that the contact angle increases with increasing surfactant concentration, as shown in figure 2.

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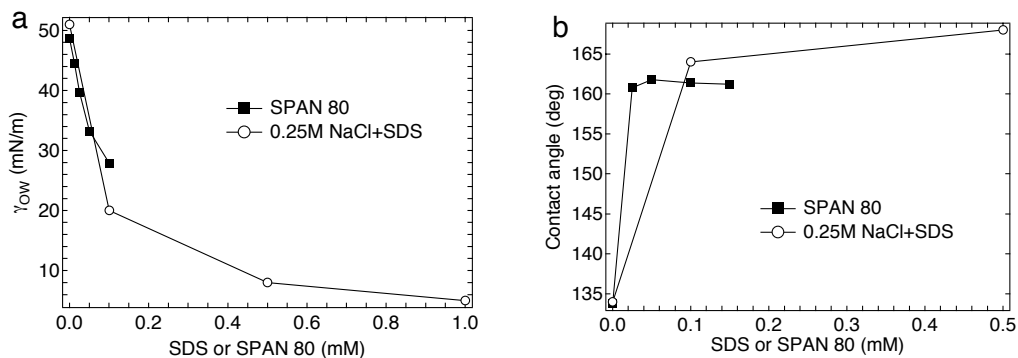


FIG. 2. Measurements of the (a) interfacial tension  $\gamma_{OW}$  and (b) three-phase contact angle  $\theta_t$ . Open circles are data for 0.25M NaCl and SDS in the aqueous sub-phase and closed squares are for SPAN 80 added to the decane super-phase.

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  - [2] S. Reynaert, P. Moldenaers and J. Vermant, *Langmuir*, 2006, **22**, 4936–4945.
  - [3] R. Aveyard, J. Clint and D. Nees, *Colloid Polym Sci*, 2000, **278**, 155–163.