Soft Matter



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# Electronic Supporting information

# Multiwalled functional colloidosomes made small and in large quantities via bulk emulsification

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## Movie descriptions

The videos described below complement the results shown in the main manuscript

**Movie S1.mov**

Demonstration of colloidosome preparation by two step double emulsification :
*An aqueous suspension consisting of 5wt% hydrophilic 1 µm $SiO_2$ particles and 2ml of 2mM phosphate buffer at pH 5 is emulsified in a 3ml toluene suspension containing 20wt% $SiO_2$ and then re-emulsified again in an aqueous solution consisting of about 15ml of 2mM borax buffer at pH 10 and 1wt% PVA using a rotor-stator mixer.*

**Movie S2.mov**

Selective sedimentation of colloidosomes:
*Snapshots at the bottom of a vial after addition of a mixture of double and single emulsions at the top of the vial. The double emulsions contain 1 µm hydrophilic $SiO_2$ particles and thus sediment preferentially.*

**Movie S3.mov**

Selective separation of magnetic double emulsions:
*Magnetic double emulsions are attracted selectively to a magnetic gradient.*

**Movie S4.mov**

Magnetic size separation:
*Magnetic colloidosomes are attracted towards high magnetic fields in a magnetic gradient.*

**Movie S5.mov**

Magnetic transport of colloidosomes:
*A colloidosome with a magnetic shell is manipulated by a magnetic field.*

**Movie S6.mov**

Brownian colloidosomes:
*A multiwalled colloidosome undergoing Brownian motion in water.*

**Movie S7.mov**

Brownian dumbbell colloidosome:
*A colloidosome with two compartments undergoing Brownian motion in water.*

**Movie S8.mov**

Fast and slow pH triggered release from colloidosomes:
*Release of FITC labeled dextran from colloidosomes that contain pH swellable microparticles. Fast and slow release is achieved by the addition of 0.1M KOH and 2mM buffer at pH 10, respectively.*

**Movie S9.mov**

pH triggered release from small Brownian colloidosome
*Brownian colloidosomes with encapsulated swellable microparticles are ruptured by an increase in the pH of the surrounding aqueous phase.*

## Cargo encapsulation in Brownian colloidosomes

Fig. S1 demonstrates that colloidosomes made from ultrasonicated double emulsions (Fig. 8) are able to effectively encapsulate cargo molecules. In this case, FITC labeled dextran with a molecular weight of 500'000 g/mol was used as a model cargo molecule. The figure shows an overlay of the fluorescent and brightfield images. The slight mismatch in the position of the capsule in these images results from the Brownian motion of the colloidosome between two consecutive snapshots.

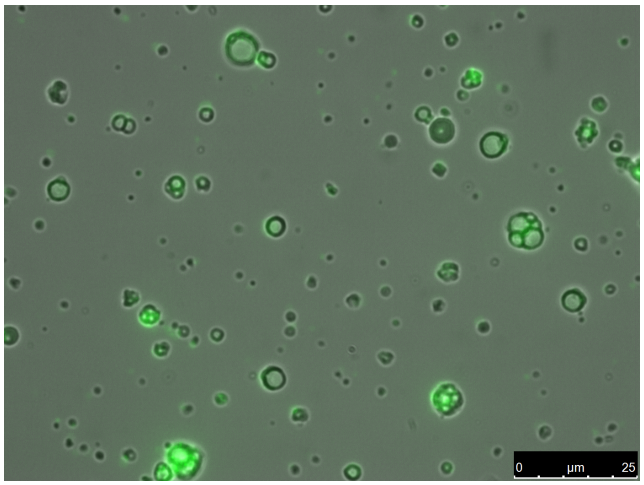


*Fig. S1.* Brownian multiwalled colloidosomes made from ultrasonicated double emulsions. Fluorescent and brightfield images were overlaid to show the effective encapsulation of a fluorescent dye inside the colloidosomes.

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