

## Supporting information

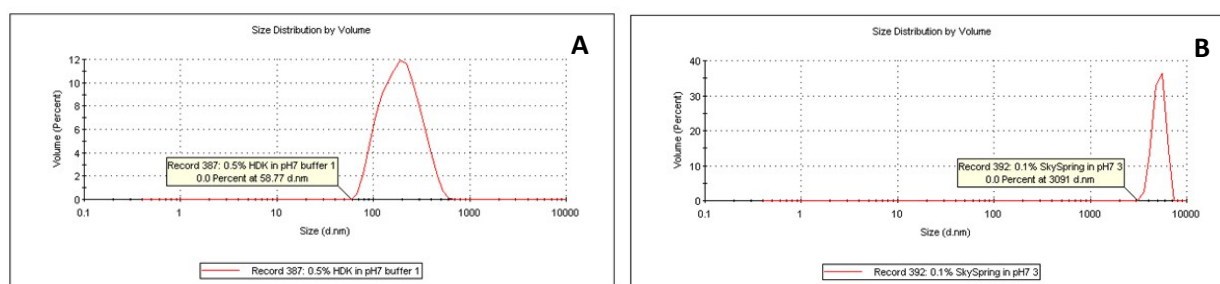
### Hybrid Microcapsules with Tunable Properties via Pickering Emulsion Templates for the Encapsulation of Bioactive Volatiles

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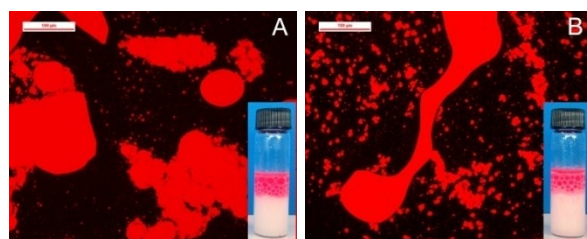
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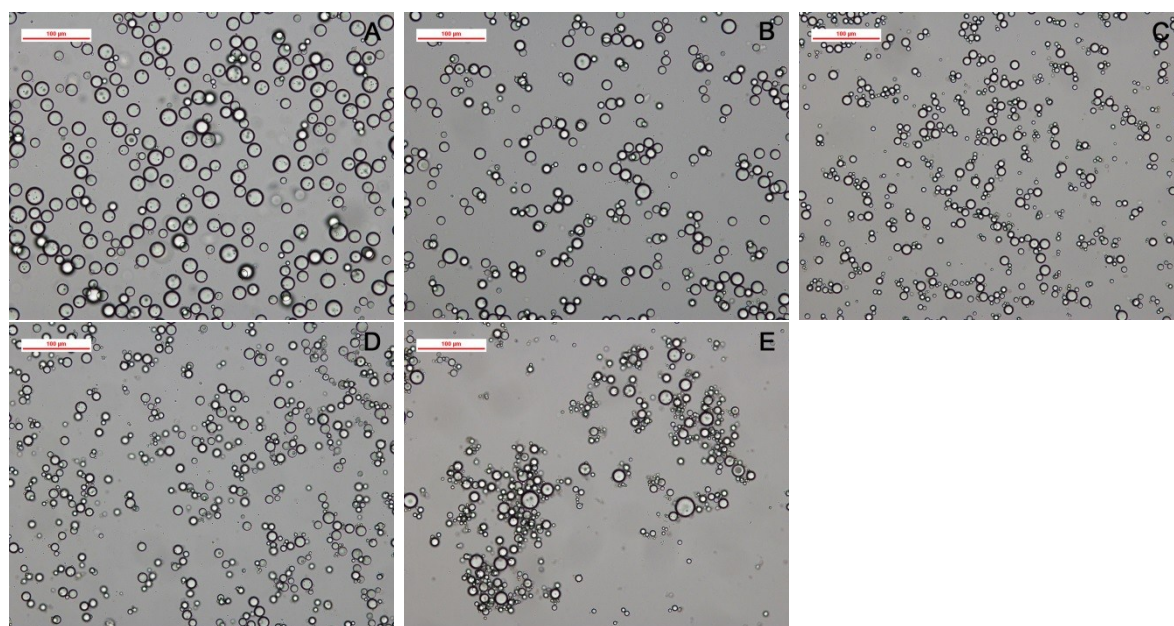
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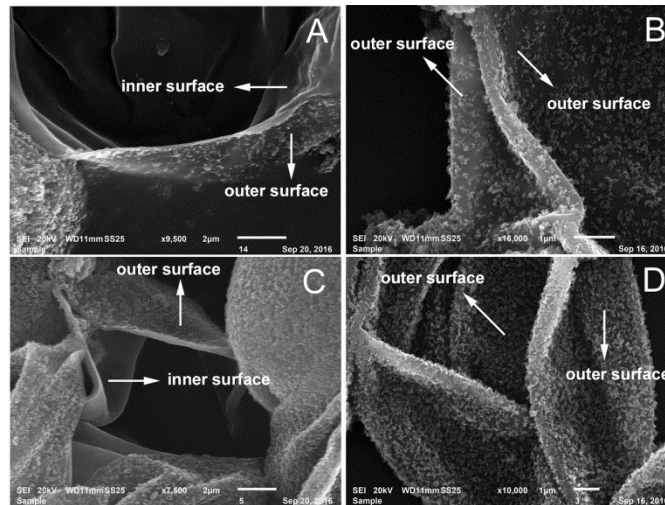
**Fig. S1** Particle size distribution curves obtained using dynamic light scattering. (A) Amorphous fumed silica HDK N20 (OH-SiO<sub>2</sub>), (B) Amino-functionalized SiO<sub>2</sub> particles (NH<sub>2</sub>-SiO<sub>2</sub>).



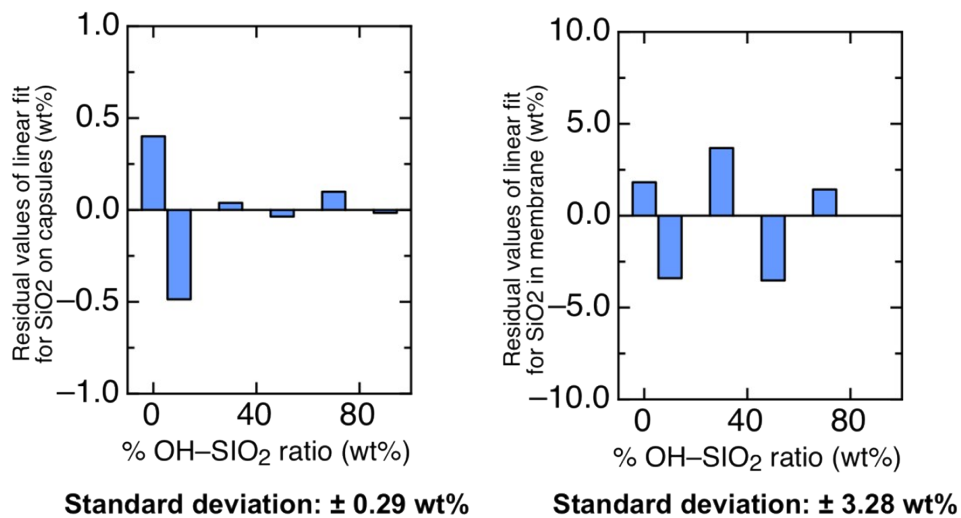
**Fig. S2** Optical microscopic images of Nile-red stained O/W Pickering emulsions formed with model perfume oils prepared exclusively with OH<sub>2</sub>-SiO<sub>2</sub> (A) stabilized by 1.0 wt % OH-SiO<sub>2</sub> and (B) stabilized by 1.5 wt % OH-SiO<sub>2</sub> in pH 7 buffer. The oil phase and water phase ratio is fixed at 3:7. The inserts are photographs of corresponding Pickering emulsions ripening for 2 h at room temperature after emulsification.



**Fig. S3** Optical microscopic images of O/W Pickering emulsions stabilized by complex SiO<sub>2</sub> particles stabilizer with fixed SiO<sub>2</sub> content at 1.5 wt % in pH 7 buffer (A) 10% OH-SiO<sub>2</sub> & 90% NH<sub>2</sub>-SiO<sub>2</sub>, (B) 30% OH-SiO<sub>2</sub> & 70% NH<sub>2</sub>-SiO<sub>2</sub>, (C) 50% OH-SiO<sub>2</sub> & 50% NH<sub>2</sub>-SiO<sub>2</sub>, (D) 70% OH-SiO<sub>2</sub> & 30% NH<sub>2</sub>-SiO<sub>2</sub>, (E) 90% OH-SiO<sub>2</sub> & 10% NH<sub>2</sub>-SiO<sub>2</sub> as complex stabilizer. The oil phase and water phase ratio is fixed at 3:7. All scale bars are 100 µm.



**Fig. S4** SEM micrographs of broken hybrid microcapsules (A, C) and collapsed hybrid microcapsules (B, D). (A) and (B) are same hybrid microcapsules prepared with pure  $\text{NH}_2\text{-SiO}_2$  as stabilizer during emulsification, (C) and (D) are same hybrid microcapsules prepared with  $\text{SiO}_2$  mixture ( $\text{OH-SiO}_2/\text{NH}_2\text{-SiO}_2=30/70$ ) as stabilizer during emulsification. The scale bars in (A) and (C) are 2  $\mu\text{m}$ , in (B) and (D) are 1  $\mu\text{m}$ .



**Fig. S5** Residuals of the linear fits shown in Figure 4 as obtained from linear least square regression (ProFit Software, Quansoft, Switzerland). The standard deviations of these residual values are indicated below each graph.