

## Electronic Supplementary Information

### **High-throughput fabrication of monodisperse spherical supraparticles through a reliable thin oil film and rapid water diffusion**

*Wonhyung Lee, Youngjae Nam, Joonwon Kim\**

*Department of Mechanical Engineering, Pohang University of Science and Technology (POSTECH),*

*77 Cheongam-ro, Nam-gu, Pohang-si, Gyeongsangbuk-do, Republic of Korea 37673*

\* Corresponding authors.

*E-mail address: joonwon@postech.ac.kr (J. K.)*

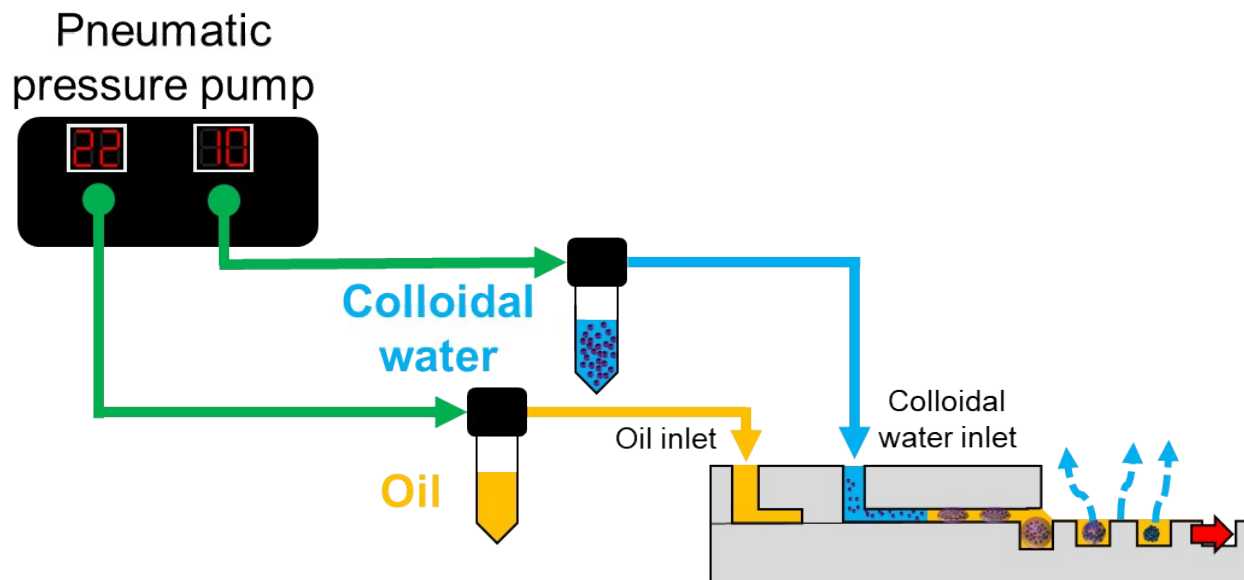
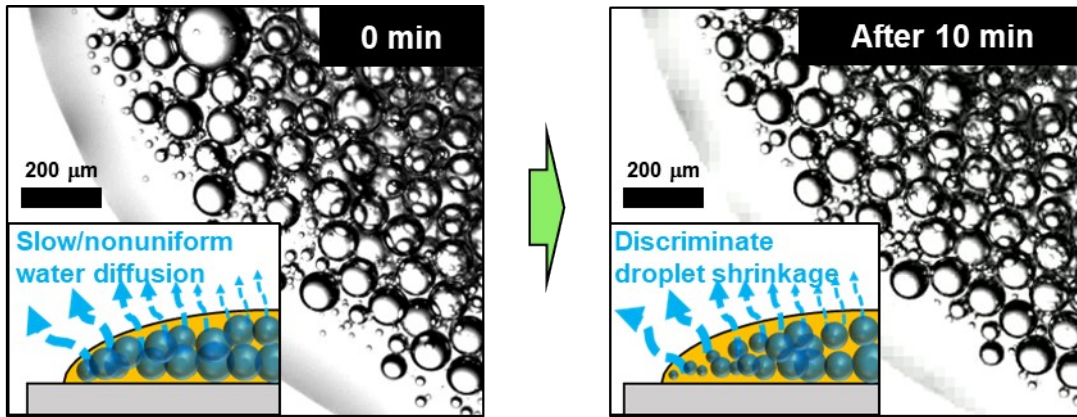
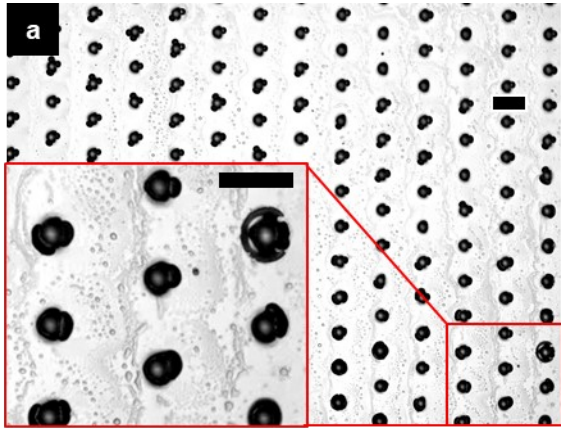


Fig. S1. Experimental setup of the system.

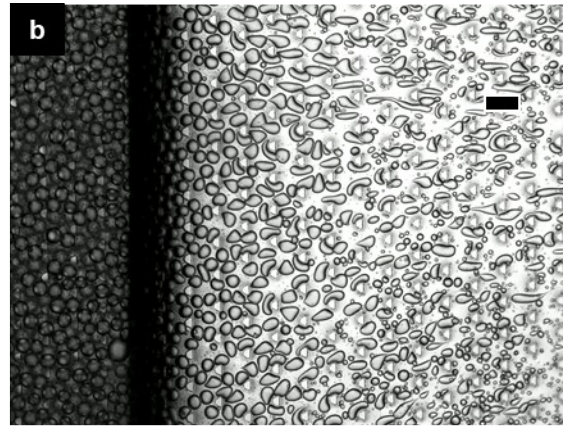


**Droplet evaporation in **bulk** olive oil layer**

**Fig. S2.** Water droplet evaporation in a bulk oil layer. The bulk oil layer cannot provide fast water diffusion.



**Nonspherical and polydisperse supraparticle due to faster evaporation of NOVEC 7500**



**Suspension droplet instability in viscous olive oil**

**Fig. S3.** Unreliable supraparticle fabrication in NOVEC 7500 and olive oil. (a) Due to low water-in-fluid solubility and high vapor pressure, NOVEC 7500 evaporated too quickly for complete supraparticle assembly. (b) The high water-in-fluid solubility and low vapor pressure of olive oil allowed for fast and reliable droplet shrinkage, but splits in colloidal droplets were observed, likely due to the high viscosity of the olive oil and changes in interfacial tension. All scale bars are 100  $\mu\text{m}$ .