

Microfluidic preparation of water-in-oil-in-water emulsion with an ultra-thin oil phase layer

Daisuke Saeki,^{a,b,c} Shinji Sugiura,*^a Toshiyuki Kanamori,^a Seigo Sato,^b and Sosaku Ichikawa^b

a Organ Development Research Laboratory, National Institute of Advanced Industrial Science and Technology

(AIST), 1-1-1 Higashi, Tsukuba, Ibaraki 305-8565, Japan. Fax: +81-29-861-6278; Tel: +81-29-861-6286;

E-mail: shinji.sugiura@aist.go.jp

b Graduate School of Life and Environmental Sciences, University of Tsukuba, 1-1-1 Tennodai, Tsukuba, Ibaraki

305-8572, Japan.

c Japan Society for the Promotion of Science, 8 Ichibancho, Chiyoda-ku, Tokyo 102-8472, Japan.

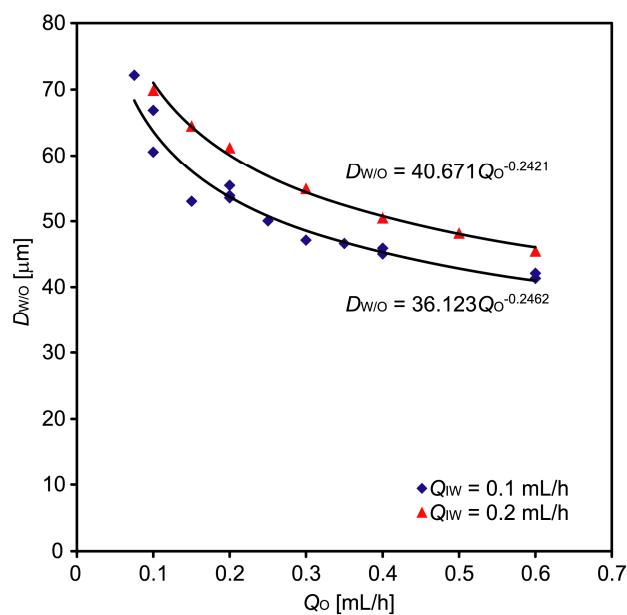


Fig. S1. Effect of Q_{IW} and Q_O on the W/O droplet diameter ($D_{W/O}$). Q_{EW} was 2.34 mL/h.

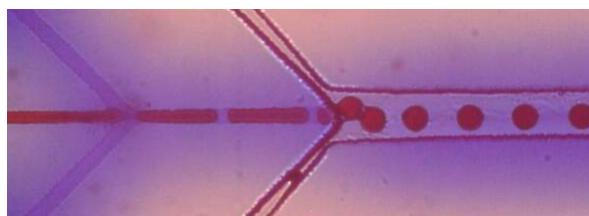


Fig. S2. Visualization of an oil phase flow. The oil blue N solubilized in the oil phase stained the microfluidic device, indicating that oil phase flowed along the surface of the W/O/W microchannel. Oil blue N was added at 1

wt % to the oil phase. Q_{IW} , Q_O and Q_{EW} were 0.10, 0.20, and 2.34 mL/h, respectively.

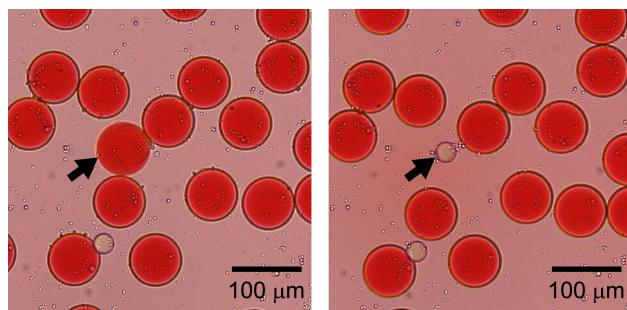


Fig. S3. Rupture of the prepared W/O/W droplets. Droplet rupture was induced by osmotic pressure change, which was caused by addition of Milli-Q water to the external aqueous phase. Q_{IW} , Q_O and Q_{EW} were 0.10, 0.10, and 7.02 mL/h, respectively. The arrow indicates the rupturing droplet. The left image was acquired before rupture and the right image was acquired after rupture.