## Supporting Information

## Coalescence driven self-organization of growing nanodroplets around a microcap

Brendan Dyett,<sup>a</sup> Hao Hao,<sup>b</sup> Detlef Lohse<sup>c</sup> and Xuehua Zhang<sup>d,a,c</sup>

<sup>a</sup> Soft Matter & Interfaces Group, School of Engineering, RMIT University, Melbourne, VIC 3001

<sup>b</sup> Electrical and Biomedical Engineering, RMIT University, Melbourne, VIC 3001, Australia.

<sup>c</sup> Physics of Fluids group, Department of Science and Engineering, Mesa+ Institute, J. M. Burgers Centre for Fluid Dynamics and the Max Planck Center Twente for Complex Fluid Dynamics, University of Twente, P.O. Box 217, 7500 AE Enschede, The Netherlands

<sup>d</sup> Department of Chemical & Materials Engineering, Faculty of Engineering, University of Alberta, Edmonton, Alberta, T6G1H9, Canada



**Figure S1.** (A) Growth of HDODA droplets around a 5.62  $\mu$ m microcap given by individual droplet radius ( $\mu$ m) vs time (s), differentiated by colour. (B) Growth of HDODA droplets around a 3.70  $\mu$ m microcap given by individual droplet radius ( $\mu$ m) vs time (s). Time = 0 in this case only corresponds to the beginning of this growth interval which was selected due to the absence of coalescence events.



**Figure S2.** Schematic and TIRF images of droplet coalescence around a microcap. The left column shows coalescence between droplets on the rim and flat substrate. The right column shows coalescence between droplets atop of the lens and the rim. In each case the blue and red circle indicates the smaller and larger droplet respectively. The radii of each droplet pair are as follows: (A) 529 nm and 614 nm (B) 790 nm and 1120 nm (C) 729 nm and 826 nm (D) 445 nm and 460 nm (E) 718 nm and 1045 nm (F) 674 nm and 1150 nm.