



**Fig. S1** (a) Two layers of PDMS slabs, each engraved with top and bottom channels of the device. (b) The layout of the mask design of the channel, with the part of outlet<sub>1</sub> enlarged to show the detailed dimensions.

**Movie S1.** A movie showing the assembly of droplets into  $n=2-5$  by inserting air bubbles between the droplets generated from alternating sequence and breakup (when  $N=4$ ).