Electronic Supplementary Material (ESI) for Lab on a Chip.

Double emulsion deformation under conditions of flow cytometry hydrodynamic focusing

Shaohua Ma, Wilhelm T. S. Huck, Stavroula Balabani

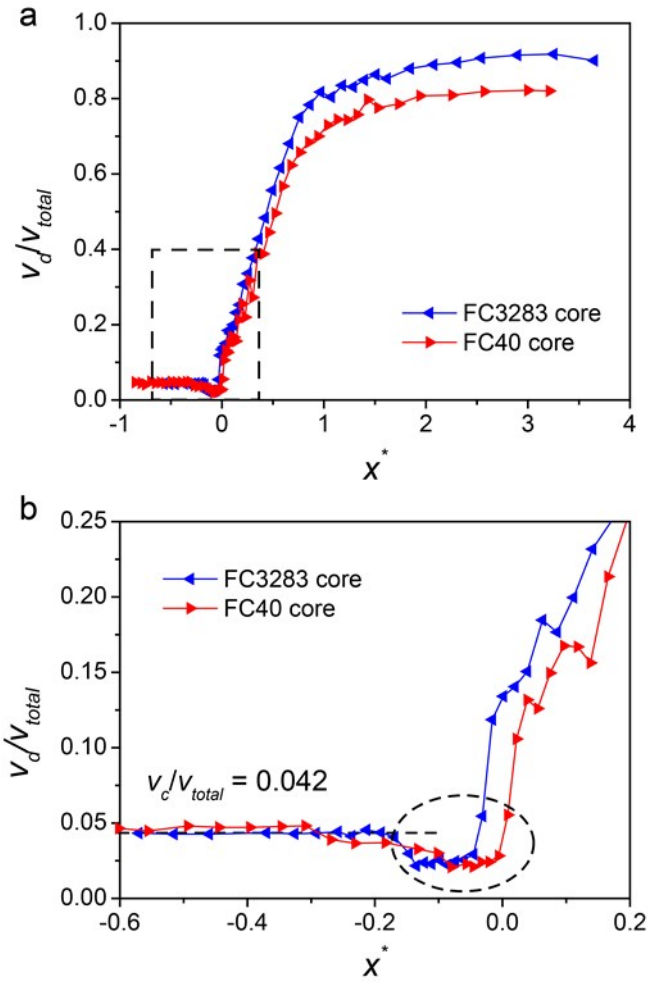

Fig S1. v_d/v_{total} as a function of x^* when w/o/w double emulsions pass through the sheath flow focusing region. The double emulsions are composed of different middle oil phases: FC3283 (low viscosity) or FC40 (high viscosity), both loaded with 0.5 wt% EA surfactant. Fig b is the zoom-in of the dashed rectangular region in Fig a. All aqueous phases are 0.5 wt% SDS in DIW. λ_i(FC3283) = 0.22, λ_i(FC40) = 0.64, Ca = 0.012. v_d/v_{total} in the narrow channel is close to v_c/v_{total} (the normalised continuous velocity in the narrow channel) except for the deceleration region, indicated by the dashed ellipse in b; but in the wide channel after reaching steady flow, v_d/v_{total} = 0.9 (FC3283 core) or 0.8 (FC40 core). The merging point of sample and sheath flows (P_0) is defined as $x^* = 0$.

Notation:

v_d: double emulsion velocity; v_c: Continuous phase (sample flow) velocity in the narrow channel;

v_s: sheath flow velocity; $v_{total} = v_s + v_c/2$; $x^* = x/w$ (w = 240 μm).