Electronic Supplementary Material (ESI) for Soft Matter.

ELECTRONIC SUPPLEMENTARY MATERIAL: Sorting of capsules according to their stiffness: from principle to application

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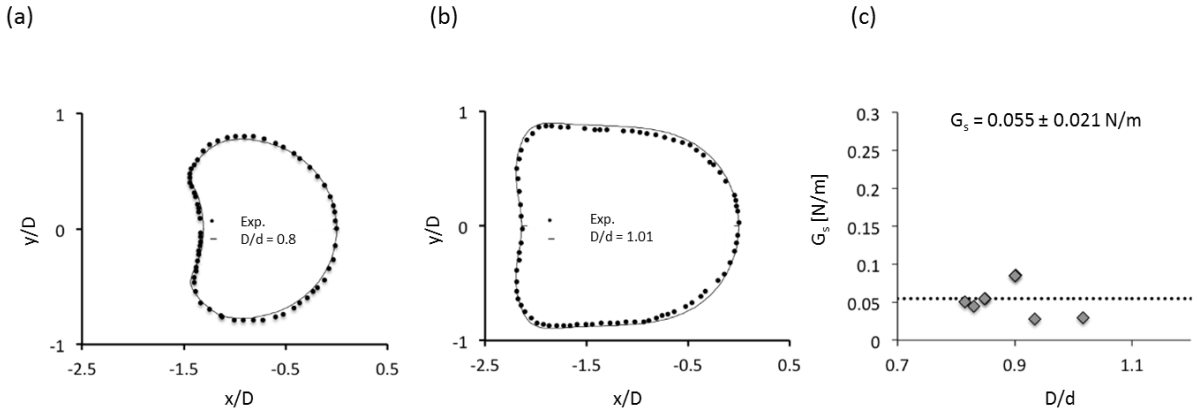

Figure S1: Measurement of the experimental value of G_s for soft capsules. Capsules manufactured at $pH = 5.9$ were propagated in a cylindrical channel of diameter $d = 150$ µm for $Ca = 0.02$. Correlation of the experimental profile (black dots) and the numerical profile (solid line) for a confinement ratio of (a) $D/d = 0.8$, where D is the diameter of the capsule and (b) $D/d = 1.01$. (c) Plot of the surface shear modulus G_s as a function of the confinement ratio D/d. The dashed line represents the average of the measured data.

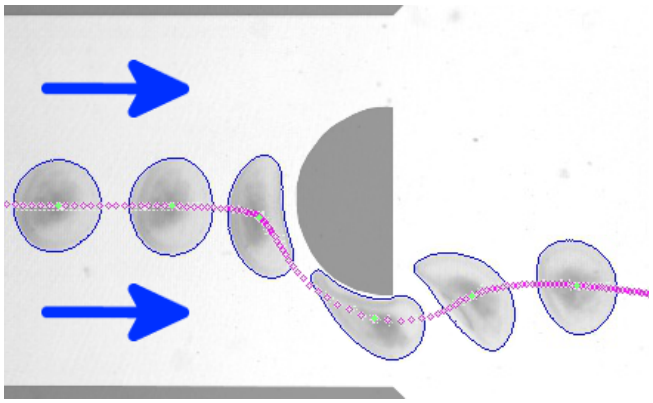

Figure S2: Image analysis of a movie capturing propagation of capsule C1 through the millimetric device. The capsule contours (blue) and centroids (pink) obtained from the analysis are superimposed onto the raw experimental images of capsule C1. The centroid corresponding to each outline is shown with a green marker. The contour is usually within 1 pixel of the capsule edge. The blue arrows indicate the direction of propagation of the capsules.

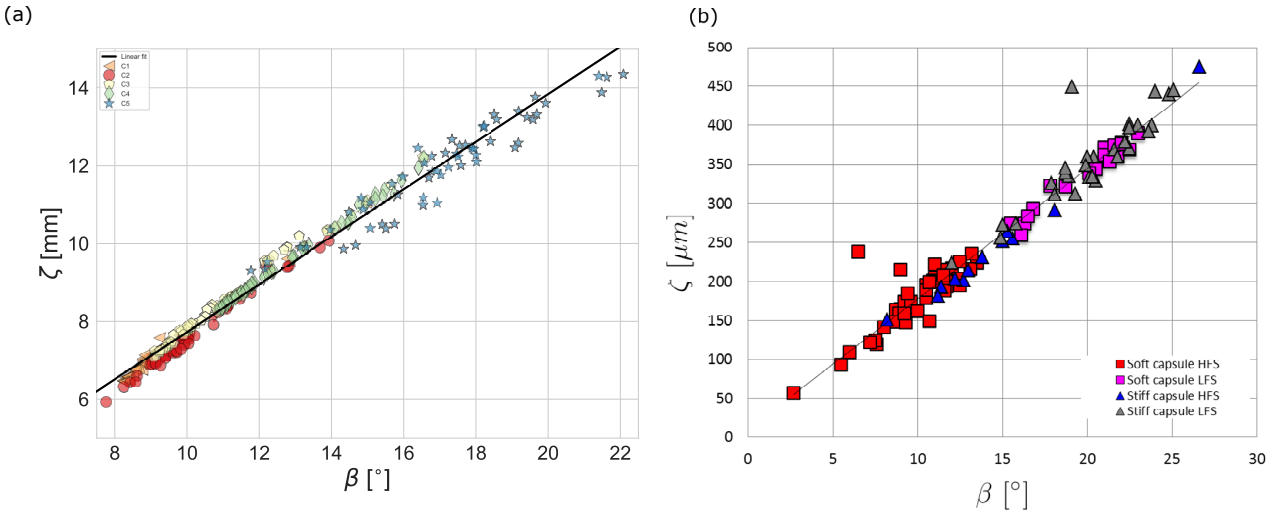

Figure S3: Dependence of the capsule displacement ζ in the diffuser on the deviation angle β. (a) Millifluidic experiments. Orange triangles: capsule C1; red circles: C2; white pentagons: C3; green diamonds: C4; blue stars: elastic bead C5. The linear fit $\zeta = (0.61 \pm 0.005)\beta(^\circ) + (1.62 \pm 0.06)$ mm is shown with a black line and the large coefficient of determination $R^2 = 0.98$ indicates a linear relationship. (b) Microfluidic experiments. Red squares: soft capsules at high flow strength; magenta squares: soft capsules at low flow strength; blue triangles: stiff capsules at high flow strength and grey triangles: stiff capsules at low flow strength. The linear fit $\zeta = 16.70\beta(^\circ) + 11.32\,\mu$m with coefficient of determination $R^2 = 0.95$ is shown with a black line.