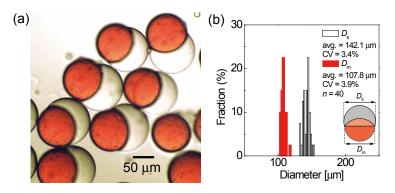
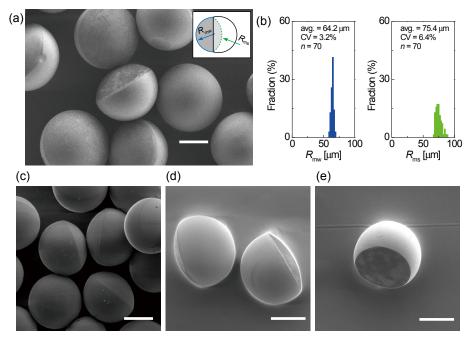
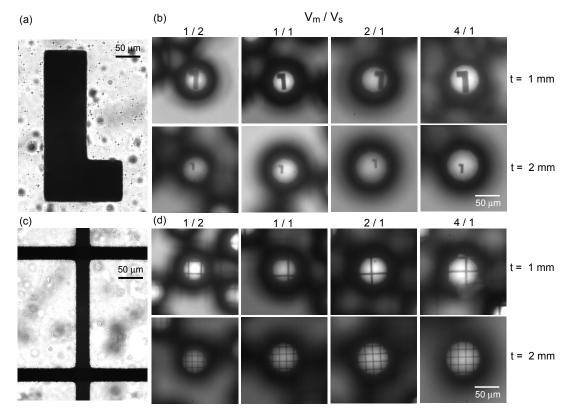
## **Supplementary Materials**



**Figure S1.** Janus droplets with surfactant KF-6015 in the non-curable phase. (a) Photomicrograph of the Janus droplets off the microfluidic chip. (b) The aperture size distributions of the two droplet segments.



**Figure S2.** Biconvex polymer microlenses prepared with surfactant KF-6015. (a) An SEM image of the lenses prepared at  $Q_m/Q_s = 1/1$ . (b) The distributions of two curvature radii  $R_{mw}$  and  $R_{ms}$ . (c–e) Biconvex particles prepared at (c)  $Q_m/Q_s = 1/2$ , (d)  $Q_m/Q_s = 2/1$ , and (e)  $Q_m/Q_s = 4/1$ . Scale bars are 50 µm.



**Figure S3.** Projection experiments with the KF-6015 biconvex lenses with different curvatures. (**a**,**c**) Micropatterns printed on a photomask sheet. (**b**,**d**) Projected images through biconvex microlenses.