Supporting Information: Movie Description

Video 1: Dewetting enlarged view

We present the dynamics of the drop interface, $h(r,t)$, (in blue) and of the concentration profile, $\phi(r,t)$, (in red) in the vicinity of the contact line at times starting from $t = 0$ till time $t/t_0 = 4.8$, with the parameters: $\mathrm{Ca/Pe} = \eta = 10^{-2}$. It can be seen that the contact line move towards the left (liquid bulk), thus dewetting the substrate during the whole period of time shown, and a unique concentration peak forms above the contact line until achieving approximately 85% of the gelation concentration. Further, it can be seen that the dewetting regime of motion continuously speeds up.

Video 2: Dewetting whole drop

We show the results of the same simulation as in Video 5, albeit we give the whole cross-section of the drop, rather than enlarging only the vicinity of the contact line.

Video 3: Wetting dewetting enlarged view

We present the dynamics of the drop interface, $h(r,t)$, (in blue) and of the concentration profile, $\phi(r,t)$, (in red) in the vicinity of the contact line at times starting from $t = 0$ till time $t/t_0 = 40$, with the parameters: $\mathrm{Ca/Pe} = \eta = 10^{-4}$. It can be seen that initially the contact line moves towards the right (the precursor film), namely wets the substrate, then it slows down and switches its direction of motion, thus dewetting the substrate. The distance that the contact line passes to dewet the substrate is larger than the distance that it passes to wet the substrate. Further, during the wetting mode the contact line continuously slows down, whereas during the dewetting mode it speeds up. The concentration profile forms a peak in the vicinity of the contact line (to the right of the contact line) until achieving approximately 85% of the gelation concentration, but the maximum is not unique, and there are two additional (lower) concentration maxima.

Video 4: Wetting dewetting whole drop

We show the results of the same simulation as in Video 7, albeit we give the whole cross-section of the drop, rather than enlarging only the vicinity of the contact line.