Supplementary Information

Complex architectures formed by alginate drops floating on liquid surfaces

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In Fig. S1, the height (h_{im}, empty circles) and the diameter of the submerged portion (d_{im}, full circles) are reported as a function of the time; In Fig. S2, the time evolution of the particle formation is displayed, collected by the high speed camera (frame rate of 1000 Hz); In Fig. S3, the SEM characterization of the produced microstructure is shown. Furthermore, in Table S1 and S2, the calculated values of We, Bo and Oh numbers are reported for the different alginate solutions and drop diameters.
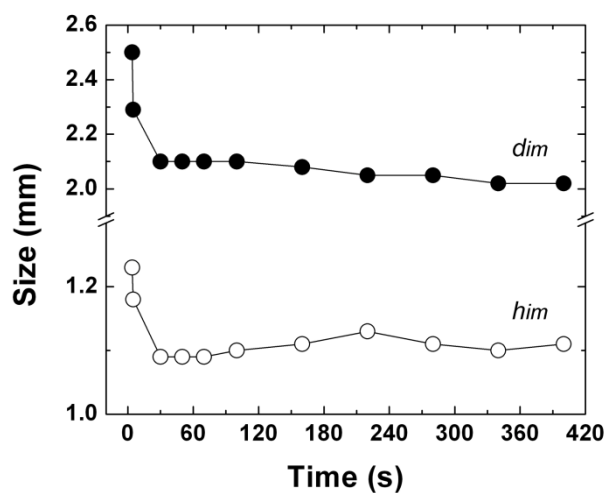

Figure S1. h_{im} (empty circles) and d_{im} (full circles) as a function of the particle generation time.

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(a) 0 s
CaCl$_2$ in water

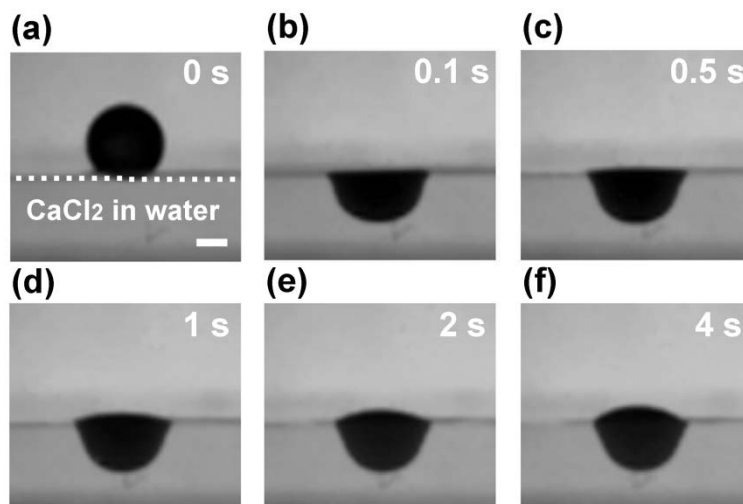**(b)** 0.1 s

(c) 0.5 s

(d) 1 s

(e) 2 s

(f) 4 s

Figure S2. (a)-(f) Time sequence of the floating event observed for a 8.2 µL drop of Alg3 solution and a falling height of 4 mm. Scale bar: 1 mm.

(a)
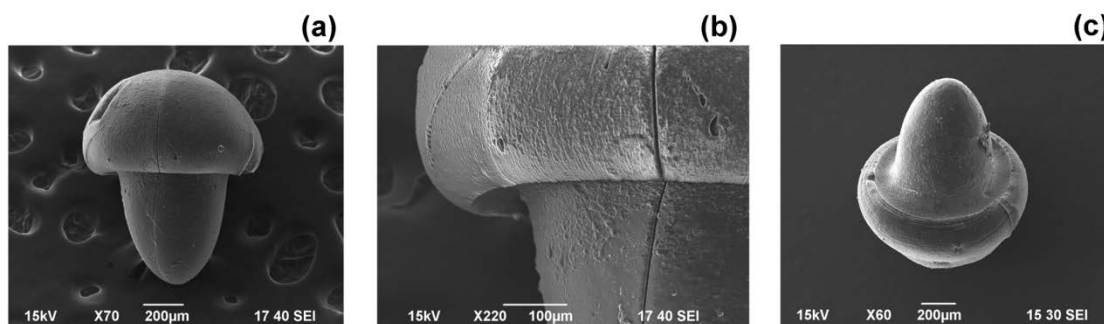15kV X70 200µm 17 40 SEI

(b)
15kV X220 100µm 17 40 SEI

(c)
15kV X60 200µm 15 30 SEI

Figure S3. SEM images of one single dried structure at different magnifications and orientations.

Table S1. We and Fr numbers[a]

		We
		$d=2.2$ mm, $Fr = 3.6$
	Alg1	2.4
	Alg3	2.5
	Alg5	2.6
	Alg7	2.7
		$d=2.5$ mm, $Fr = 3.2$
	Alg1	2.8
	Alg3	2.9
	Alg5	3.0
	Alg7	3.1
		$d=3.0$ mm, $Fr = 2.6$
	Alg1	3.3
	Alg3	3.5
	Alg5	3.6
	Alg7	3.7

[a] The reported We and Fr numbers are calculated for $h = 4$ mm, and $v = 0.28$ m/s.

Table S2. Bo and Oh numbers[b]

d (mm)	Alg%	Bo	Oh
	1	0.67	0.07
2.2	3	0.70	0.7
	5	0.72	14.3
	7	0.75	76.9
	1	0.87	0.07
2.5	3	0.90	0.7
	5	0.94	14.2
	7	0.97	71.4
	1	1.27	0.06
3.0	3	1.34	0.6
	5	1.38	12.5
	7	1.42	67.0

[b] The values of Bo and Oh are calculated for the different alginate concentrations and drop diameters, considering $h = 4$ mm, and $v=0.28$ m/s.