

Supplementary Data

Table S1. The total number of crystals counted in 10 fields of view (= 15.6 mm²) for all EPS concentrations (1–64 µg.mL⁻¹), in both HMW and LMW EPS fractions from non-buffered and buffered growth conditions. The numbers show the patterns of the total number of minerals (1–50 µm and 50–500 µm crystal size classes) precipitated with increasing EPS concentrations.

Total Number of Crystals										
HMW EPS Fraction										
Crystal Size Classes (µm)	Culture Conditions	EPS Concentrations (µg.mL ⁻¹)								All EPS Concentrations
		0	1	2	4	8	16	32	64	
1–50	Non-buffered	4542	6586	8557	7996	8906	8450	9334	10005	59834
50–500	Non-buffered	21	57	96	114	142	64	55	12	540
1–50	Buffered	5394	3978	7871	8502	6921	5527	4252	3697	40748
50–500	Buffered	41	18	41	72	95	175	82	150	633
LMW EPS Fraction										
Crystal Size Classes (µm)	Culture Conditions	EPS Concentrations (µg.mL ⁻¹)								All EPS Concentrations
		0	1	2	4	8	16	32	64	
1–50	Non-buffered	6986	6860	5686	6766	5836	5100	5599	6506	42353
50–500	Non-buffered	114	209	199	254	269	231	206	223	1591
1–50	Buffered	4088	5046	6146	6110	5952	5123	7720	8702	44799
50–500	Buffered	24	234	328	335	266	300	306	306	2075

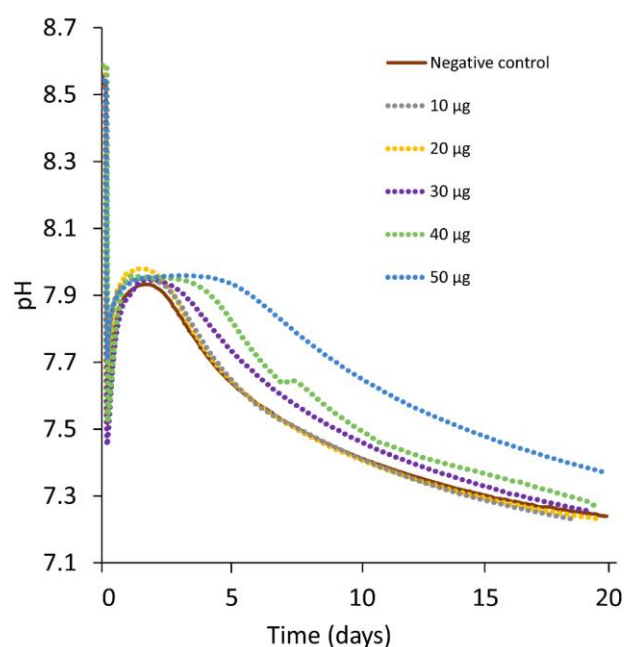


Figure S1. Replication of *in vitro* inhibition of calcium carbonate precipitation experiment of HMW EPS from non-buffered medium. A negative control (without EPS) and EPS extracts of concentrations of 10, 20, 30, 40, and 50 µg.mL⁻¹ were used in the CaCO₃ inhibition assay. The decrease of pH indicates precipitation and a plateau inhibition of carbonate precipitation. A larger plateau (> 30 µg) indicates stronger inhibition of CaCO₃ precipitation (*e.g.*, see arrow in panel A).

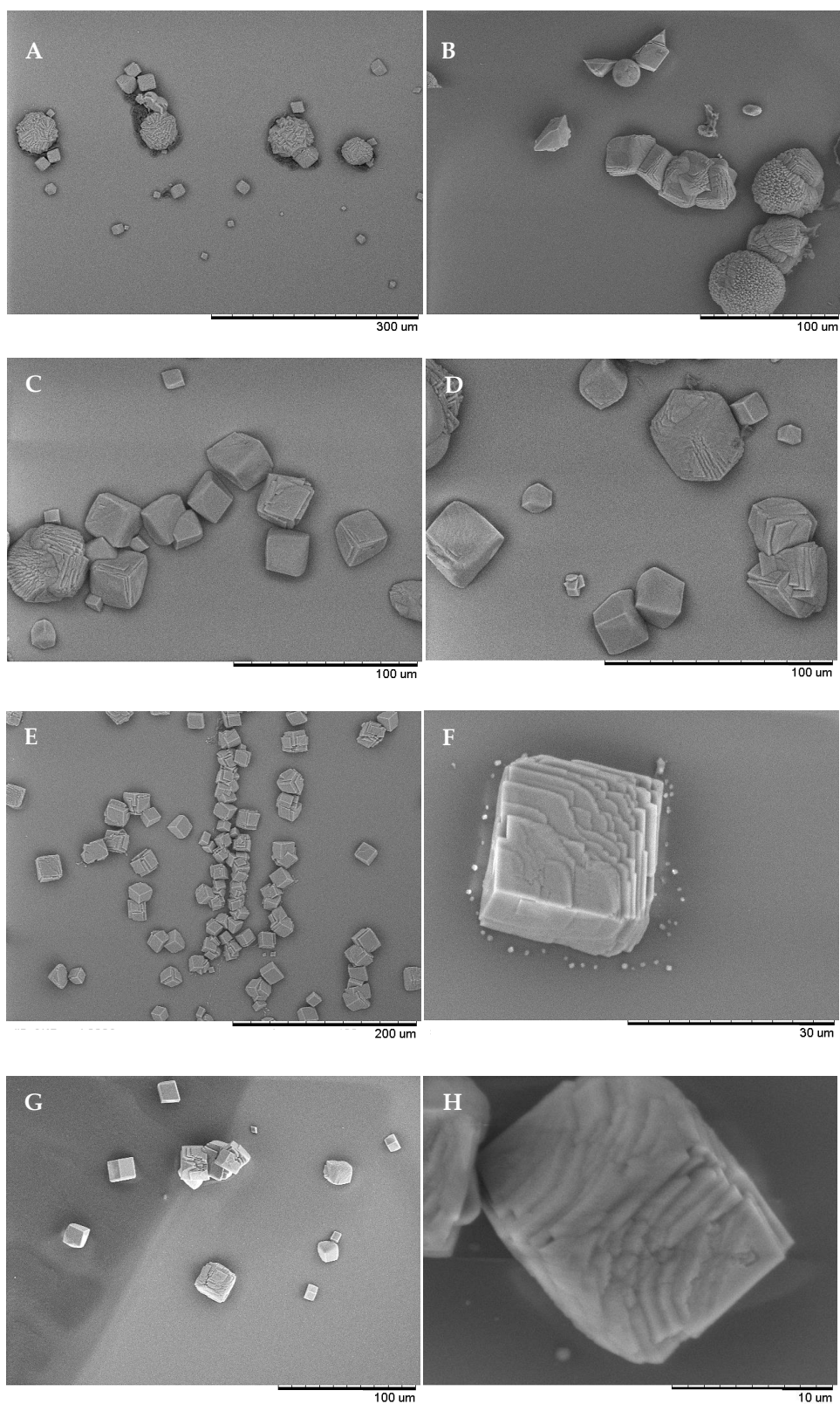


Figure S2. SEM images of CaCO_3 crystals formed in the controls of forced precipitation experiment (solutions without EPS) in HMW from (A-B): non-buffered medium, (C-D): buffered medium and LMW from (E,F): non-buffered medium, and (G-H): buffered medium.

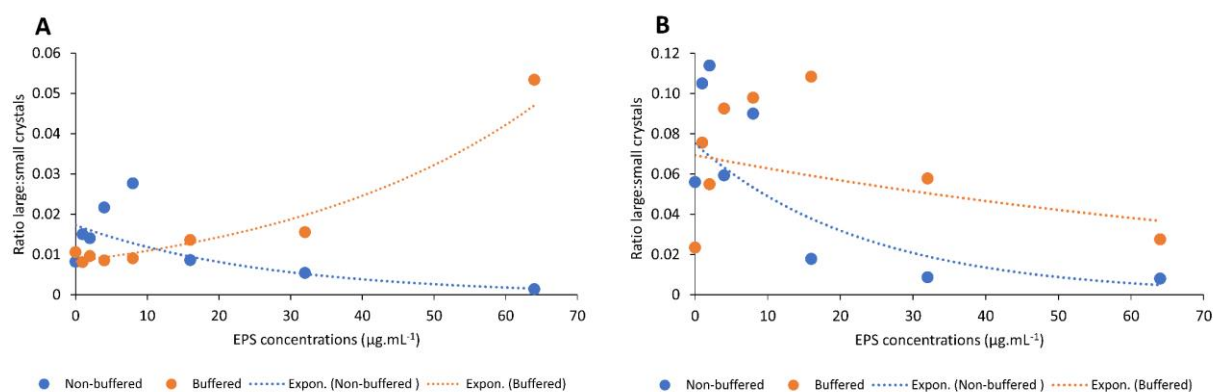


Figure S3. Replication of ratios between large and small crystals that precipitated in solutions of (A) the HMW EPS fraction from non-buffered medium (blue symbols and trend line) and from buffered medium (orange symbols and trend line); (B) the LMW EPS fraction from non-buffered medium (blue symbols and trend line) and from buffered medium (orange symbols and trend line). The orange and blue symbols shown at each EPS concentration (0-64 $\mu\text{g.mL}^{-1}$) indicate individual ratios for single precipitation experiments.