

Supporting information for The Effect of Counter Ions on Amorphous Calcium Carbonate Crystallization

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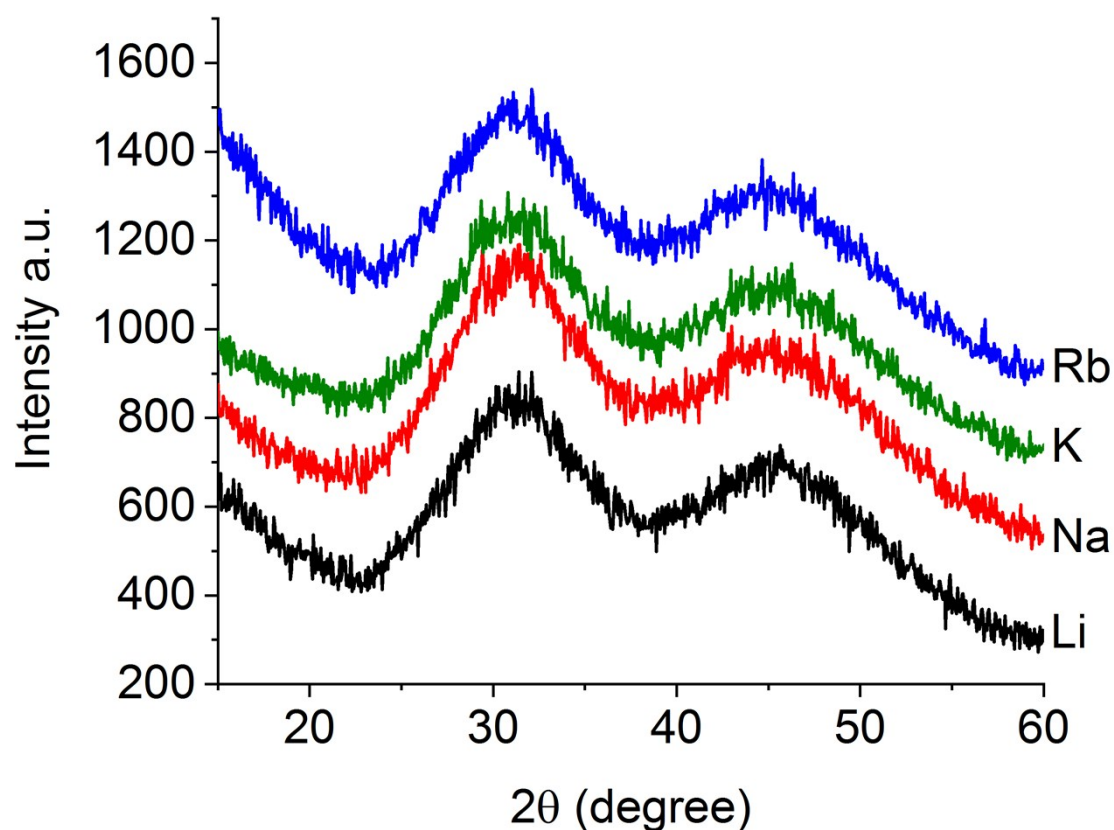


Figure S1: example PXRD patterns of the ACC sample after drying in desiccator taken from the samples made at initial concentration of 150 mM.

Table S1: solubility for M ₂ CO ₃				
Salt	Li ₂ CO ₃	Na ₂ CO ₃	K ₂ CO ₃	Rb ₂ CO ₃
Solubility in water at 20 °C (g/100 mL)	1.32	21.5	112	450

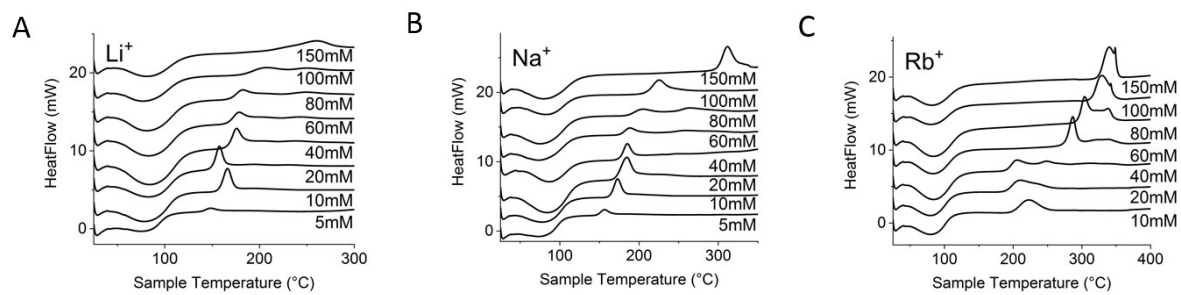


Figure S2: DSC measurements of ACC made with Li_2CO_3 , Na_2CO_3 and Rb_2CO_3 as a carbonate source.

Experimental method for particle size determination

The morphology of the synthetic ACC particles was investigated using a field emission scanning electron microscope (JEOL, JSM-7500F) working at an acceleration energy of 10 keV. The mean particle size was determined using ImageJ.¹²

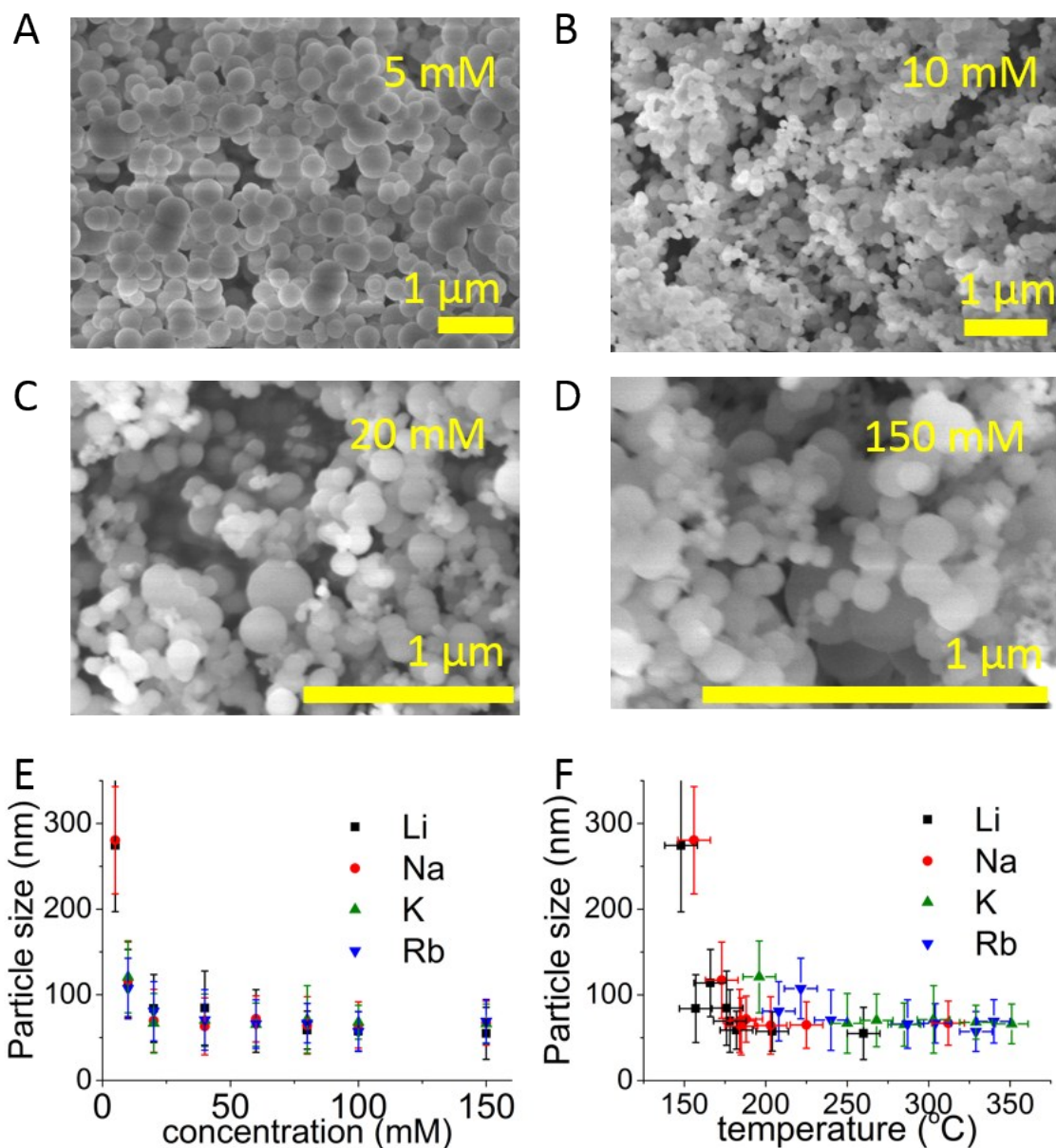


Figure S3. Example SEM pictures of ACC made at 5(a), 10(b), 20(c) and 150(d) mM. Mean particle size at different initial concentration (e) and crystallization temperature (f). With the error bars showing the standard deviation. Amorphous samples made with K and Rb carbonate could not be isolated at an initial concentration of 5 mM and are therefore omitted from the plots.

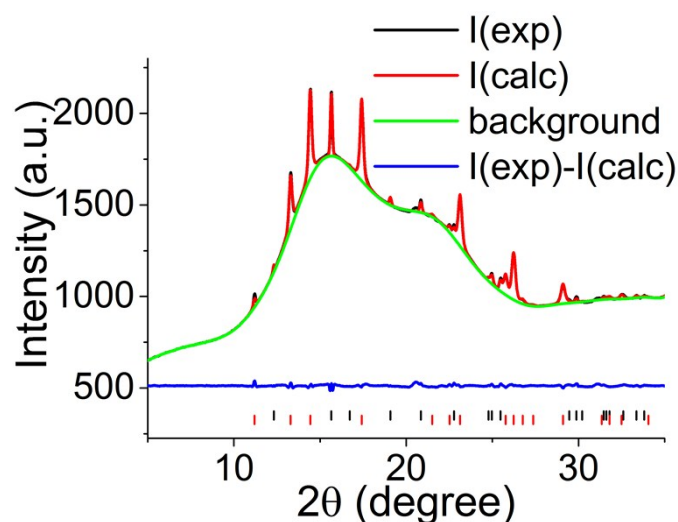


Figure S4. PXRD taken after 4 hours showing the large background dominated by diffuse scattering from the solution and the crystalline peaks coming from the vaterite and calcite phase.

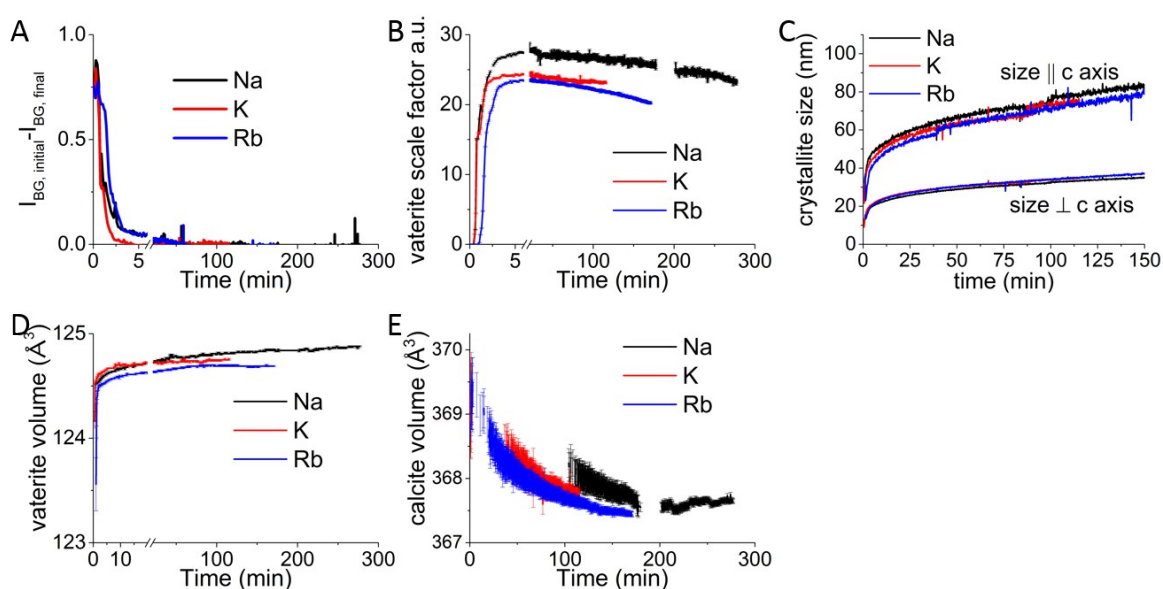


Figure S5. Parameters extracted from the PXRD using rietveld refinement showing: A) the integrated background attributed to scattering from the solution and ACC. B) the vaterite scale factor proportional to the amount of vaterite in the beam. C) Size of the vaterite crystallites. D) Average unit cell volume of the vaterite crystals. E) average unit cell volume of the calcite crystals.