Electronic Supplementary Material (ESI) for RSC Advances.

Supplementary Information

Droplet-based *in situ* X-ray absorption spectroscopy cell for studying crystallization processes at the tender X-ray energy range.

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XRD measurements

For the XRD measurements, dried powder samples were crushed to make a fine powder, loaded on a PMMA sample holder and gently pressed to make a compact and smooth surface. The measurements were done using a Bruker D8 Advance instrument with Cu radiation source (wavelength: $\alpha 1$ = 1.54056, $\alpha 2$ = 1.54439 angstrom, intensity ratio $\alpha 1/\alpha 2$= 2:1) and a Lynxeye XE, 2.943° opening detector was used. The incident beam optics were : 0.3° divergent slit, 2.5° soller slit and diffracted beam optics: 2.5° soller slit, 4° antiscatter slit and Ni filter. The diffraction pattern was recorded between 10° to 70° with a step size of 0.03°, 57.60s per step. Phase identification was done using Diffrac.eva search/match database from Bruker. Fig S1a shows the XRD patterns for the calcium carbonate reference patterns and Fig S1b shows the corresponding calcium XANES spectra with the pre-edge region zoomed in.

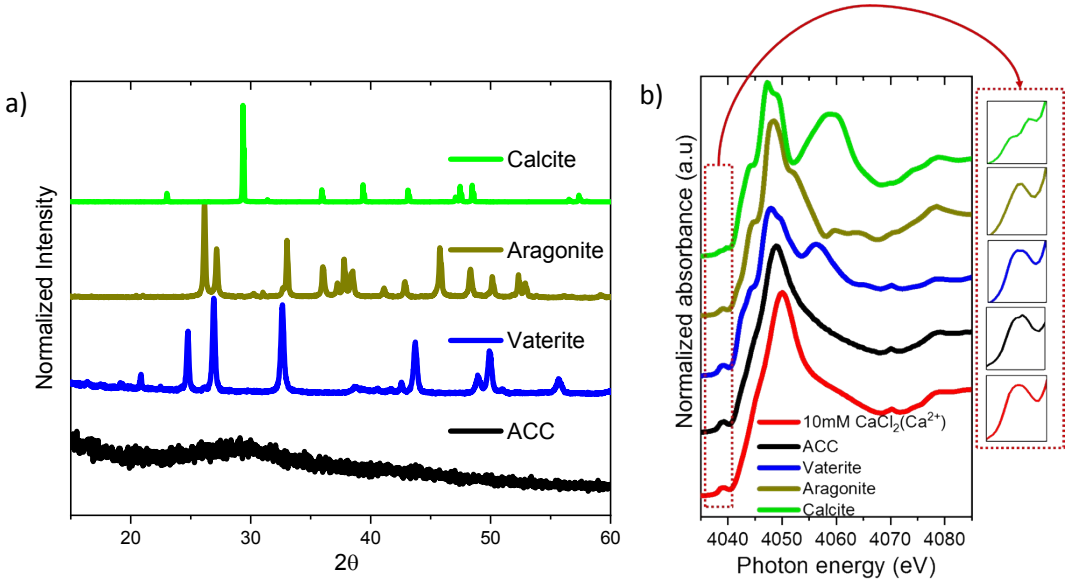

Fig S1: a) XRD patterns and b) calcium K-edge XANES spectra of ACC, vaterite, calcite and aragonite.