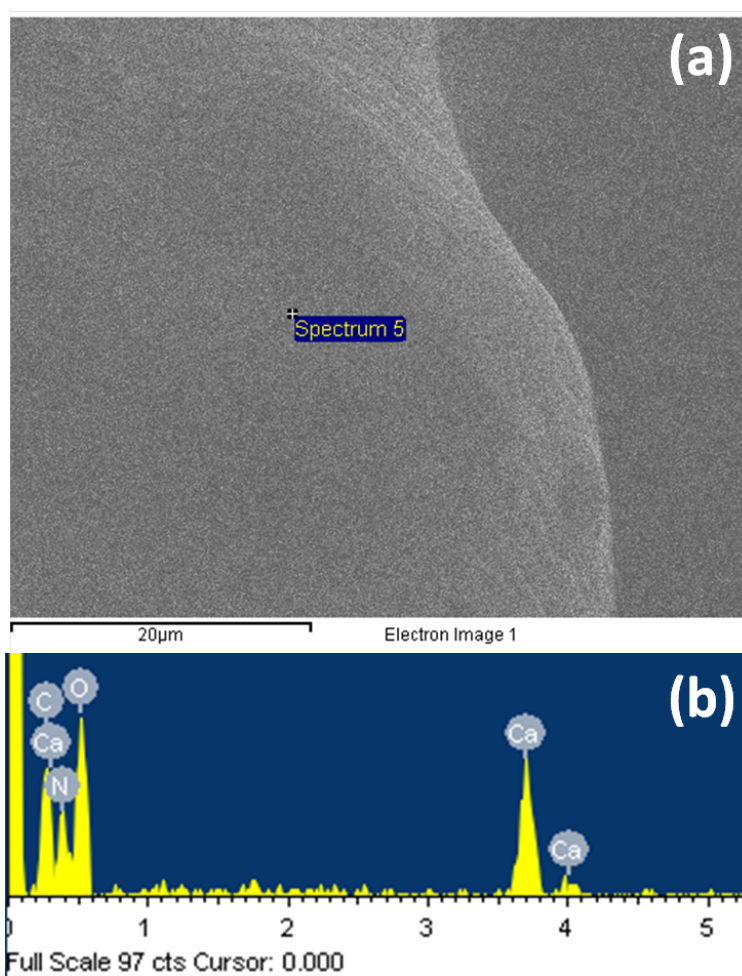


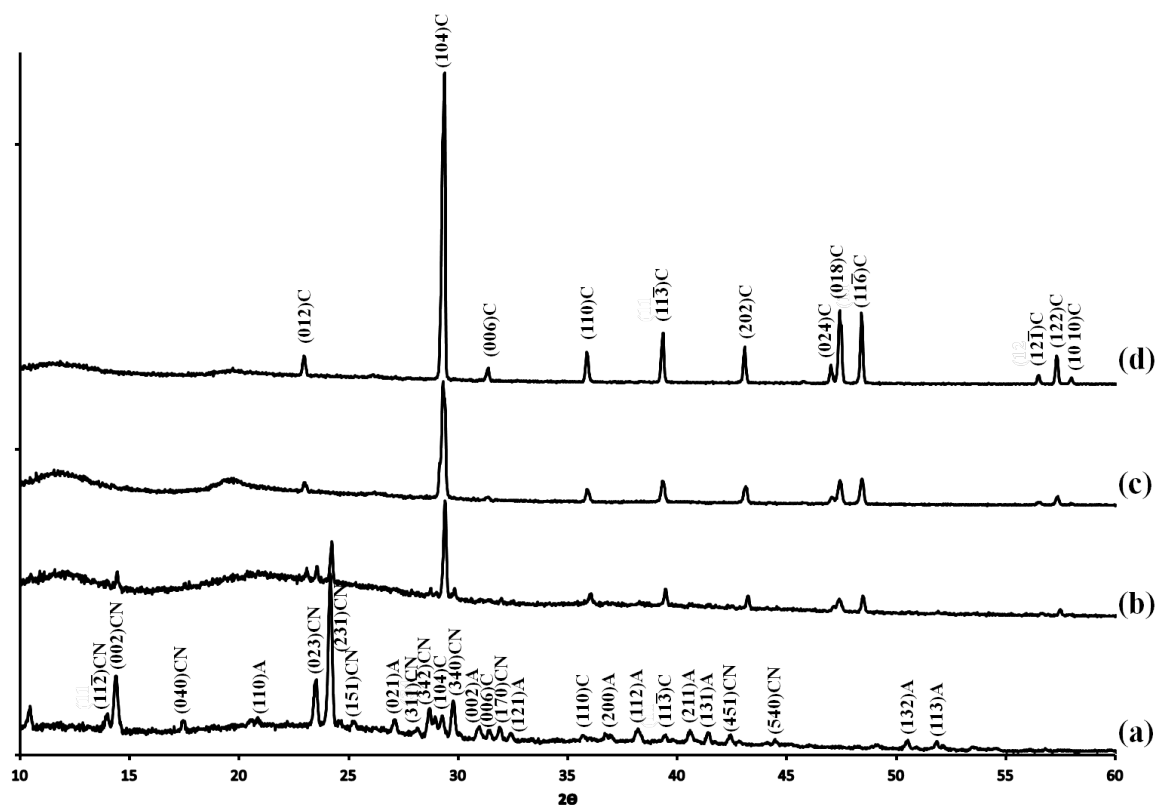
## Electronic Supplementary Information

### Reversed Crystal Growth of Rhombohedral Calcite in the Presence of Chitosan and Gum Arabic

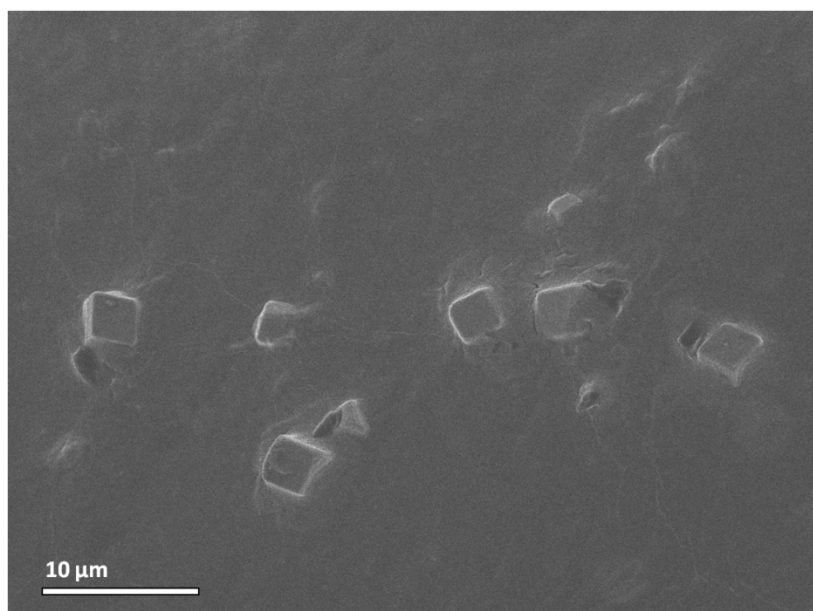
Angus W. Ritchie, Michael I. T. Watson, Robin Turnbull, Zheng Z. Lu, Michael Telfer, Jerome E. Gano, Katherine Self, Heather F. Greer and Wuzong Zhou



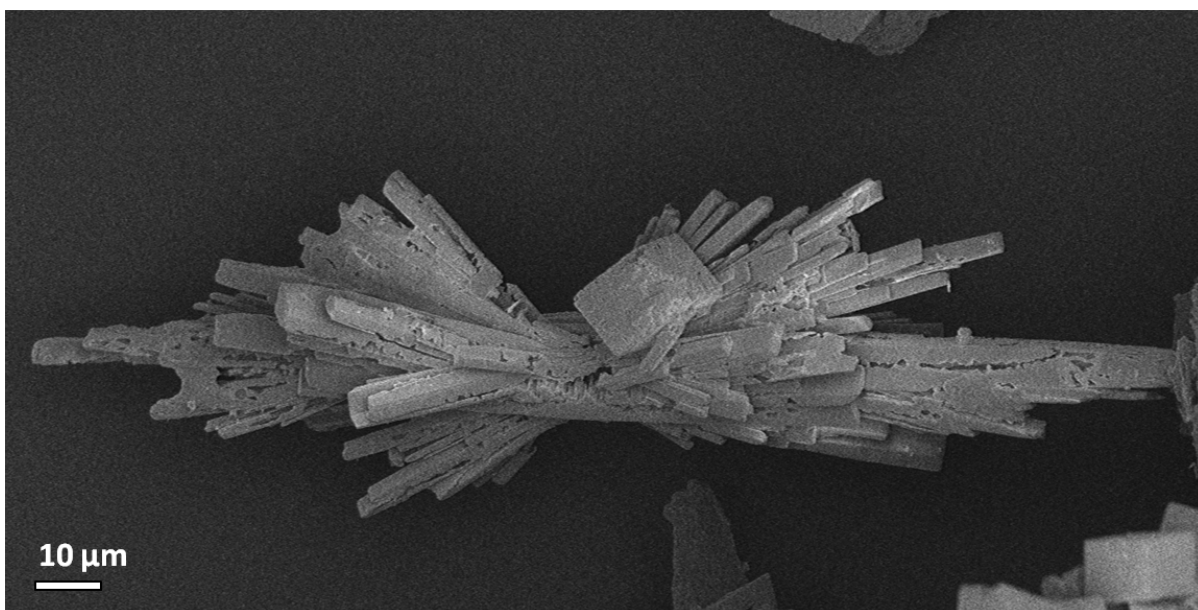
**Fig. S1.** (a) SEM image of a large disordered particle from the 45 min sample in the chitosan-containing system, and (b) the corresponding EDX spectrum.



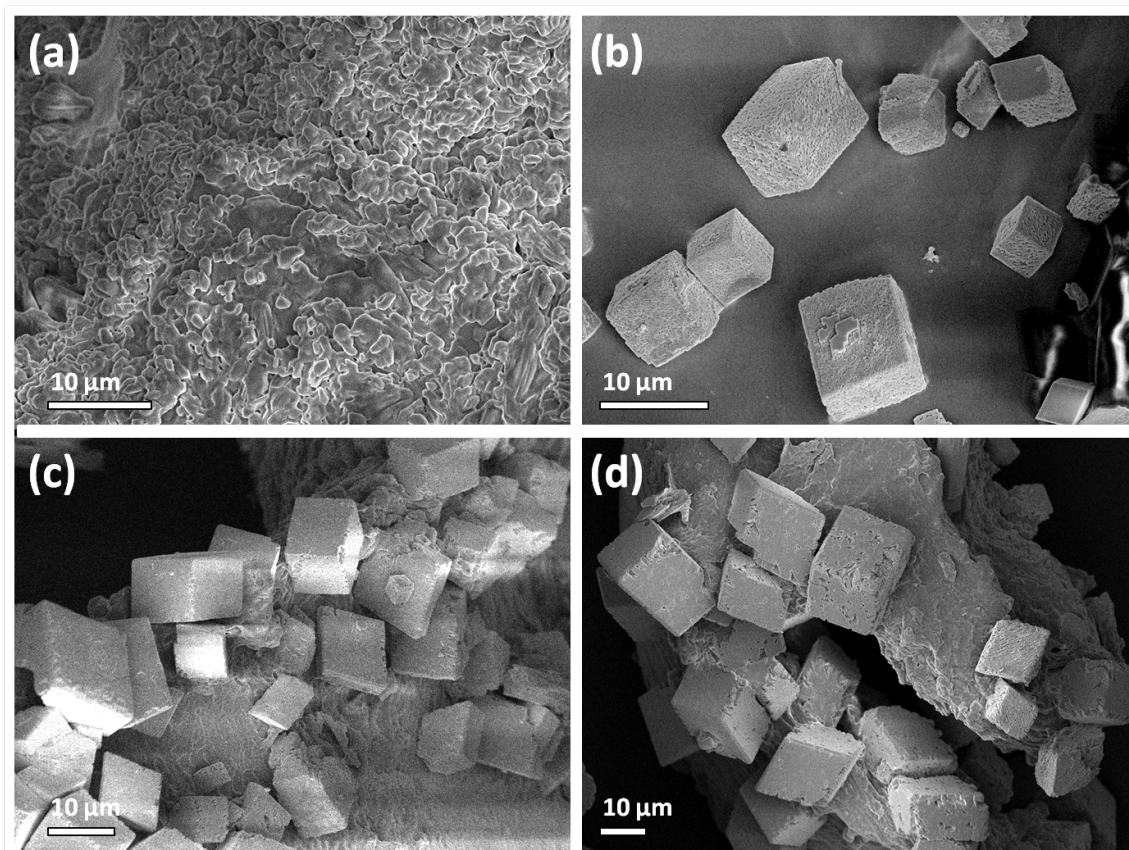
**Fig. S2.** PXR D patterns of the  $\text{CaCO}_3$ /chitosan samples at growth times of (a) 45 min, (b) 2 h, (c) 23 h and (d) 3 days. Peaks have been assigned to monoclinic calcium nitrate hydrate (CN), rhombohedral calcite (C) and orthorhombic aragonite (A) phases.



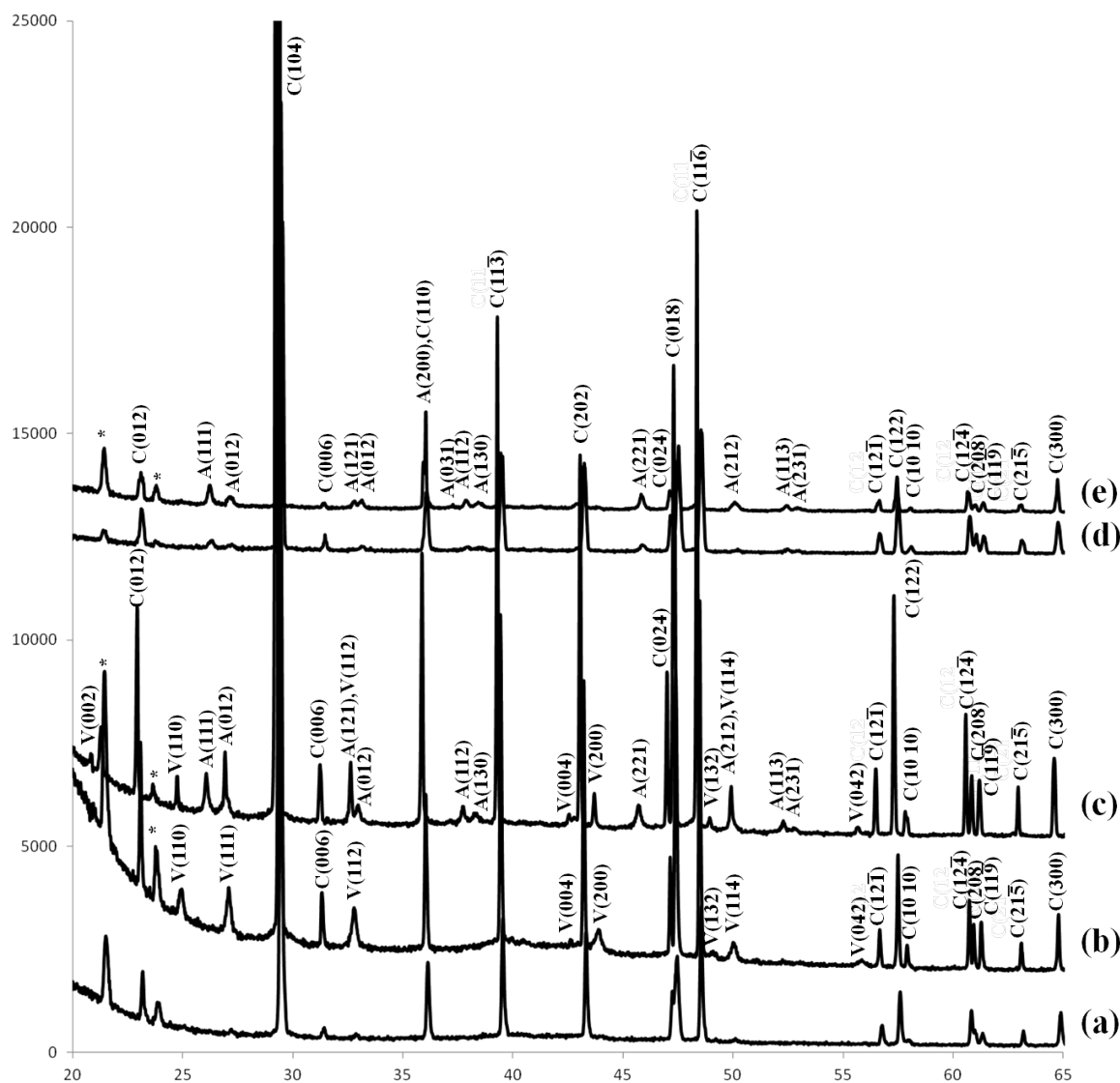
**Fig. S3.** SEM image of 2 h calcite particles embedded in the surface of a precursor and chitosan composite particle.



**Fig. S4.** SEM image showing aragonite rods alongside calcite rhombohedral crystals present in the 23 h chitosan containing sample.



**Fig. S5.** Low magnification SEM images of particles in the chitosan containing system with different incubation times of (a) 45 min, (b) 2 h, (c) 23 h and (d) 3 days.



**Fig. S6.** PXRD patterns of the  $\text{CaCO}_3$ /gum arabic samples at growth times of (a) 2 h, (b) 8 h, (c) 23 h, (d) 4 days and (e) 7 days. Peaks in pattern (b) have been assigned to the rhombohedral calcite (C) and orthorhombic vaterite (V) phases, pattern (c) is indexed to rhombohedral calcite (C), orthorhombic vaterite (V) and orthorhombic aragonite (A) phases whilst pattern (e) is indexed to a rhombohedral calcite (C) and orthorhombic aragonite (A) crystal structures, respectively. The peaks marked by \* correspond to columnar peaks from the diffractometer.