Electronic Supplementary Information

Mineralization of unique barium carbonate crystal superstructure controlled by a liquid crystalline phase polymer

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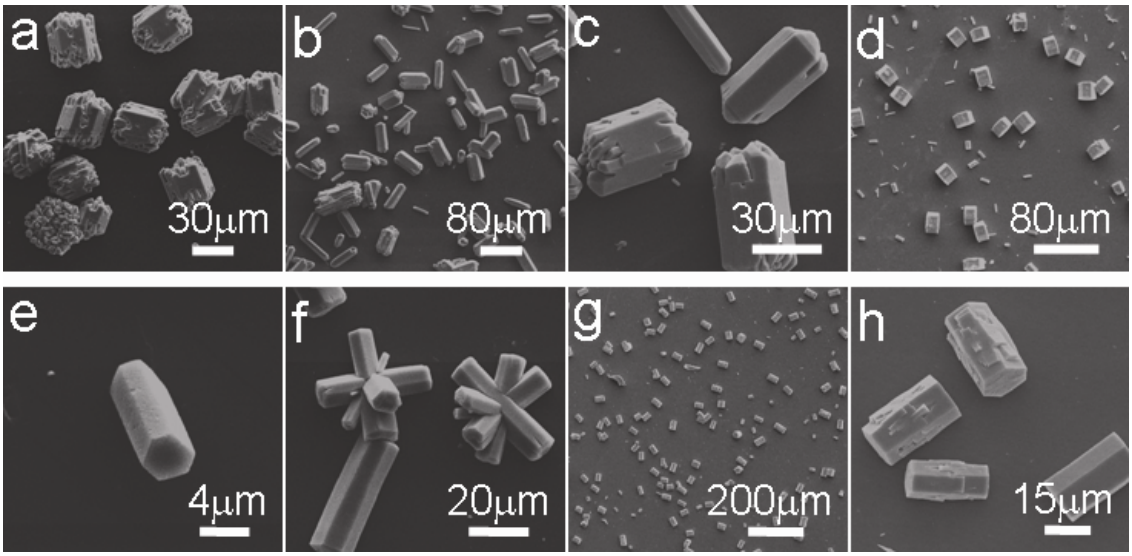

Fig. S1 SEM images of $BaCO_3$ crystals obtained at the very dilute P_{123} concentrations ($g \cdot L^{-1}$), (a) 4.5; (b, c) 3.2; (d, e) 2.7; (f) 2.2; (g, h) 1.5. The concentration of barium chloride was 20 mM.

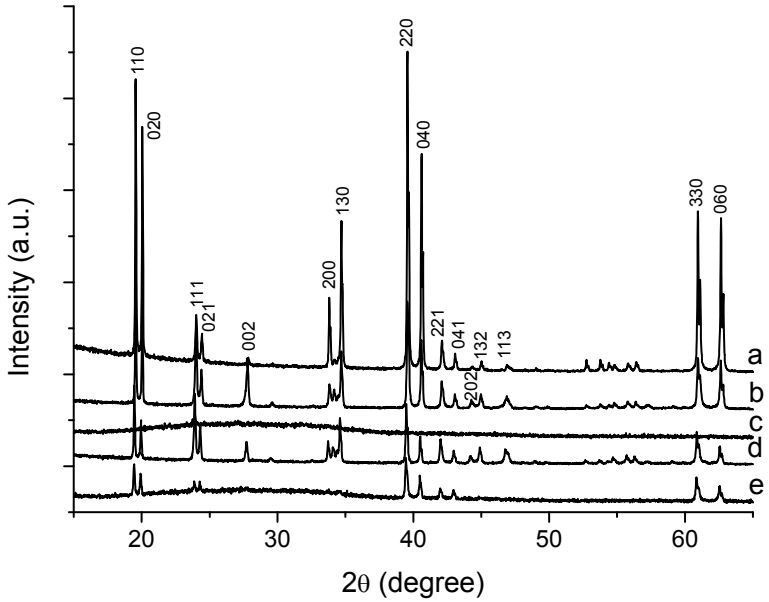

Fig. S2 XRD patterns of barium carbonate crystals obtained in the presence of different polymer concentrations ($g \cdot L^{-1}$). (a) 4.5; (b) 3.2; (c) 2.7; (d) 2.2; (e) 1.5. The concentration of barium chloride was 20 mM.

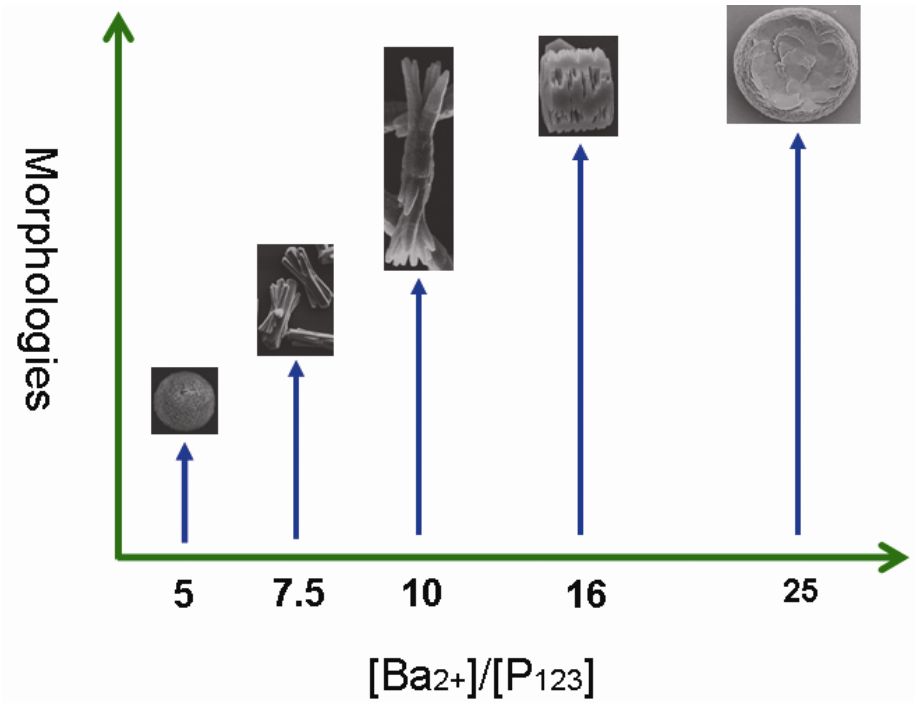

Fig. S3 The shape mapping between the $[Ba^{2+}]/[P_{123}]$ and the morphologies of the obtained $BaCO_3$ crystals. All other conditions were kept constant.

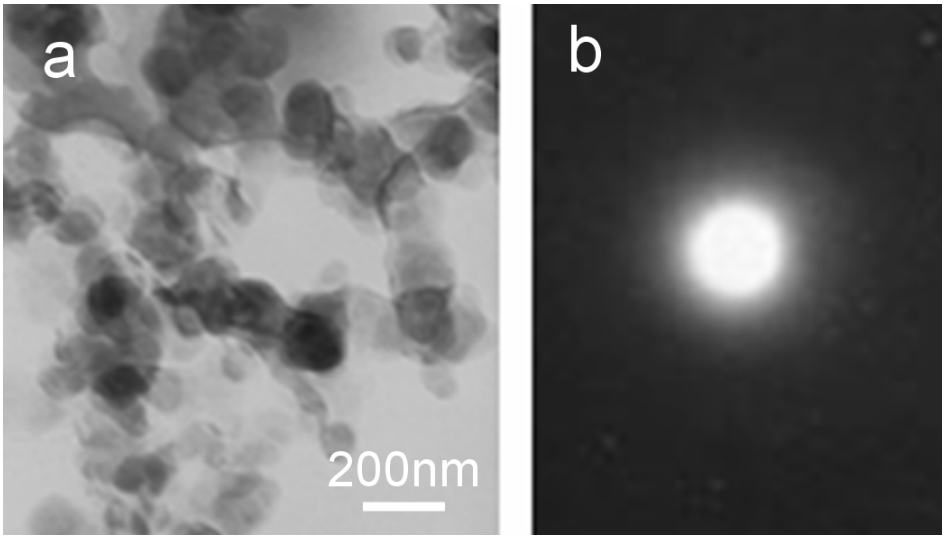

Fig. S4 The TEM image (a) and ED pattern (b) of the formed $BaCO_3$ precursor nanoparticles in the presence of P_{123} at early reaction stage.

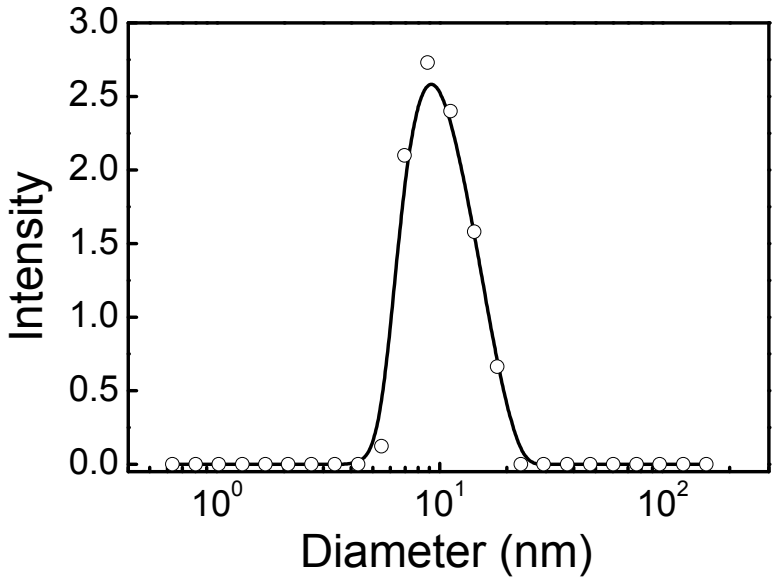

Fig. S5 Dynamic light scattering (DLS) result of P_{123} colloidal solution when added into barium chloride by stirring for several minutes. The concentrations of P_{123} and barium chloride were 8 g· L^{-1} and 20 mM, respectively.

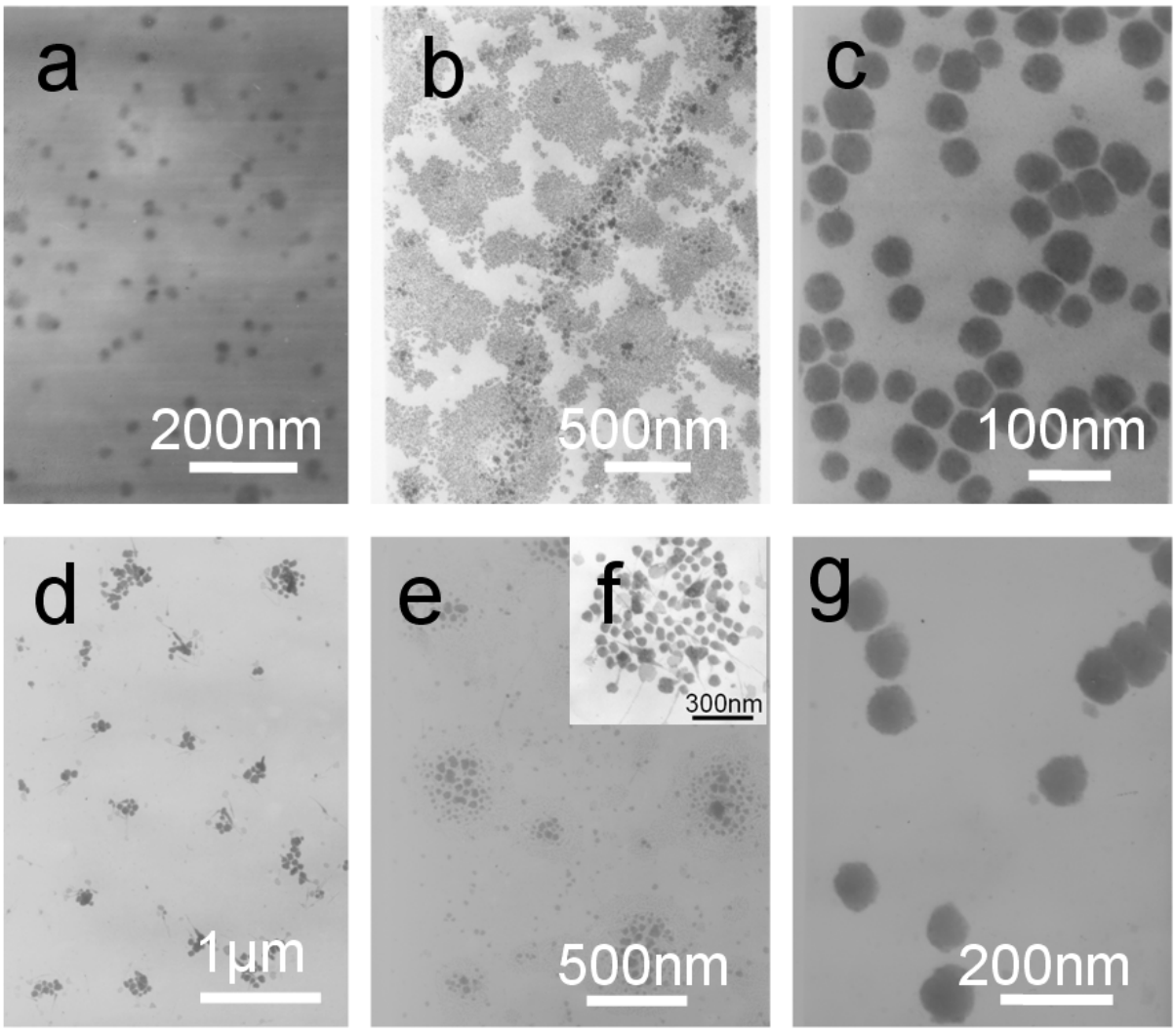

Fig. S6 The evolution process of colloidal particles/$BaCO_3$ complex aggregates formed in solution with reaction time prolonged. (a) 0 min; (b) 10 min; (c) 30 min; (d) 1 h; (e) 2 h; (f) partly magnification of (e) image; (g) 1 day. **[**P_{123}**]** = 8 g·L^{-1}**,** **[**Ba^{2+}**]** = 20 mM.