

Polymorph Selection and Structure Evolution of CaCO_3 Mesocrystals under Control of Poly(sodium 4-styrenesulfonate): Synergetic Effect of Temperature and Mixed Solvent

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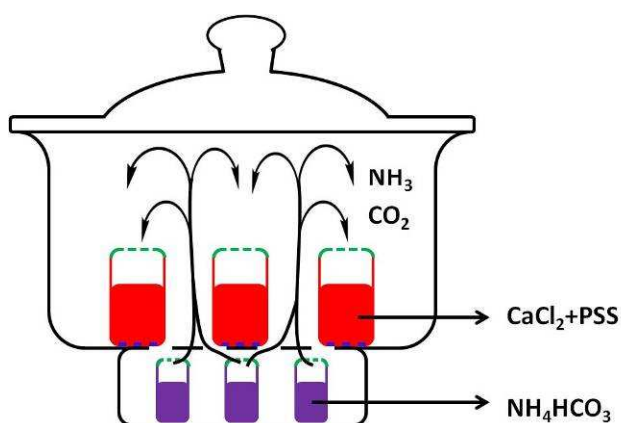


Figure S1. Schematic presentation of the gas-liquid diffusion method used for CaCO_3 crystallization in the present case. Red: solution of CaCl_2 and PSS; Purple: crushed NH_4HCO_3 ; Green: parafilm; Blue: glass slice. The sizes of all glass vessels are just schematic rather than the real ones.

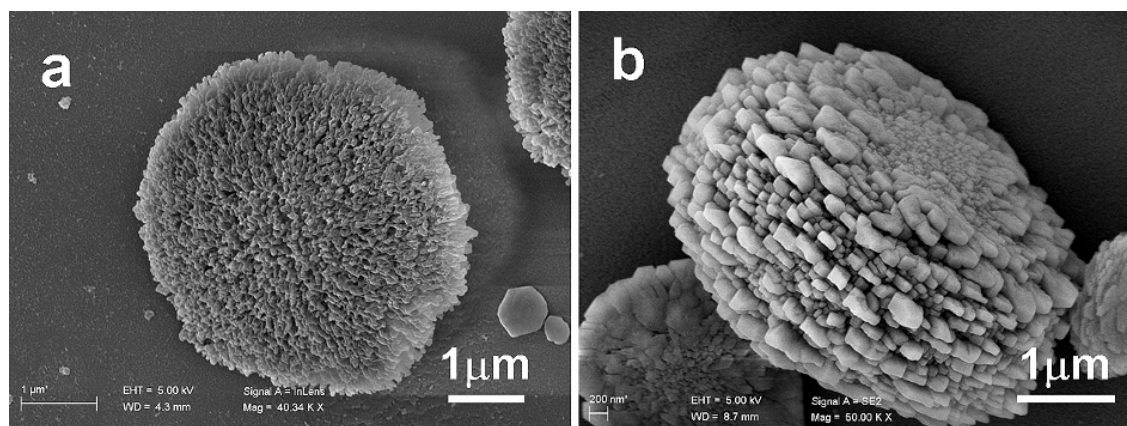


Figure S2. SEM images of vaterite mesocrystals obtained after 24h mineralization at 10 ± 2 °C with different volume ratio of water/ethanol. (a) $R = 7 : 3$; (b) $R = 3 : 7$. $[\text{Ca}^{2+}] = 1.5 \text{ mM}$, $[\text{PSS}] = 0.5 \text{ g} \cdot \text{L}^{-1}$.

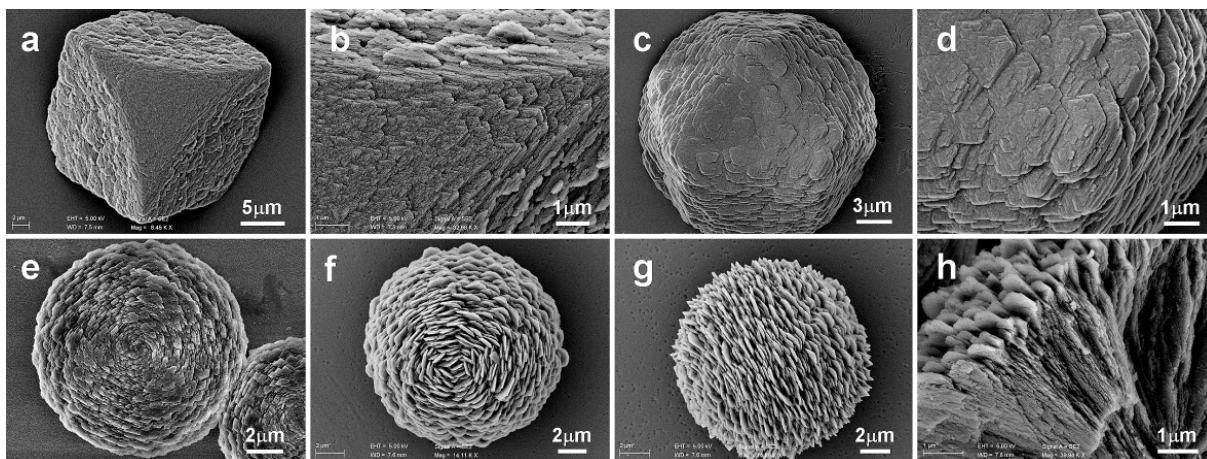


Figure S3. SEM images of calcite mesocrystals obtained after 24 h mineralization at 40 ± 2 °C with different volume ratio of water/ethanol. (a,b) R = 10 : 0; (c,d) R = 8 : 2; (e) R = 6 : 4; (f-h) R = 5 : 5. $[\text{Ca}^{2+}] = 1.5$ mM, $[\text{PSS}] = 0.5$ g·L⁻¹.

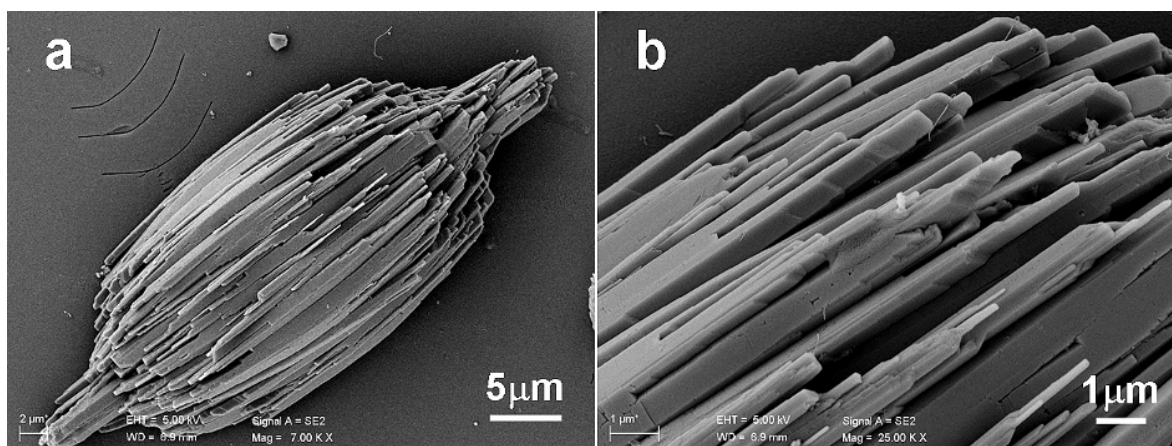


Figure S4. SEM images of aragonite rod bundles obtained after 24 h mineralization at 40 ± 2 °C with R = 6:4. $[\text{Ca}^{2+}] = 1.5$ mM, $[\text{PSS}] = 0.5$ g·L⁻¹.

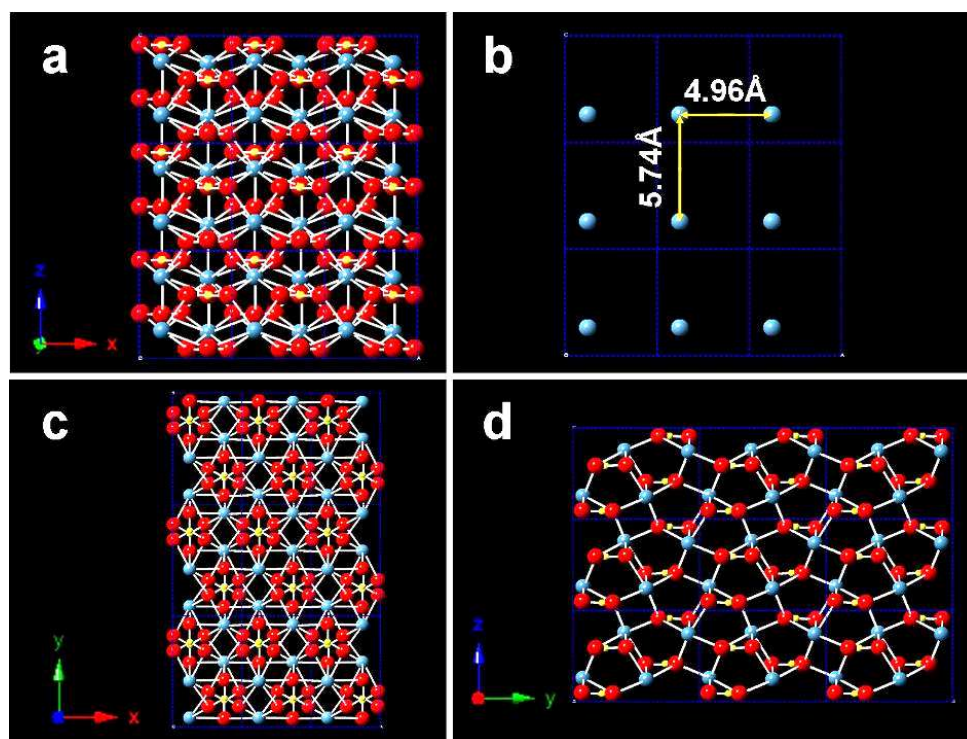


Figure S5. Crystal structure of aragonite ($3 \times 3 \times 3$) viewed from different directions. (a,b) along $[010]$ direction; (c) along $[001]$ direction; (d) along $[100]$ direction.