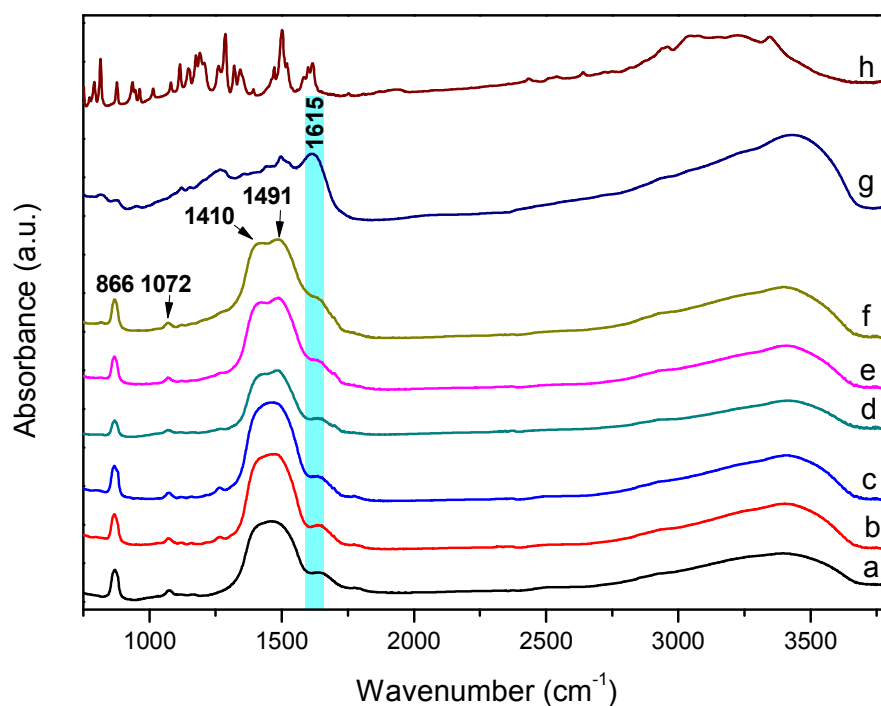


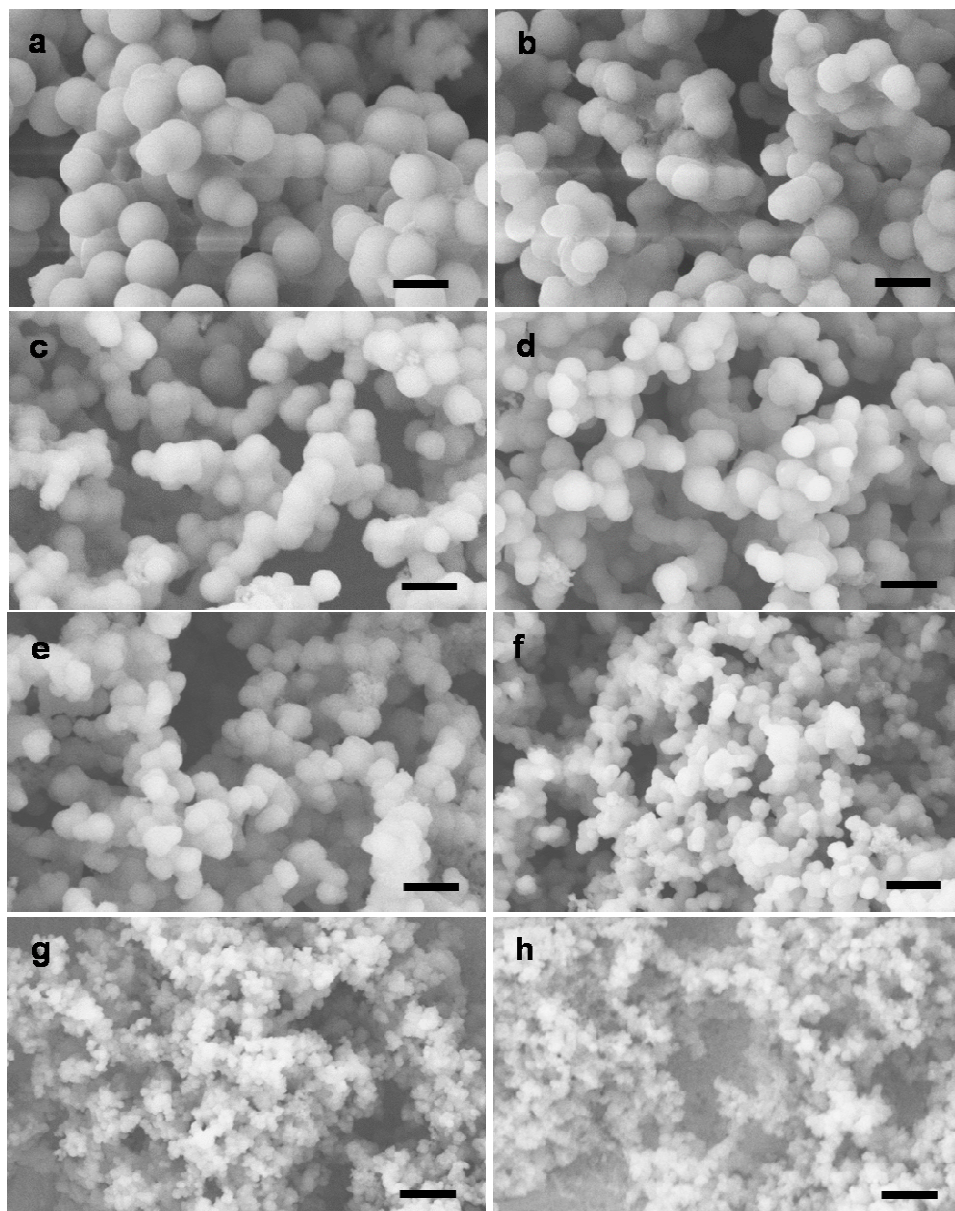
## Supporting Information

### Amorphous calcium carbonate stabilized by a flexible biomimetic polymer inspired by marine mussels

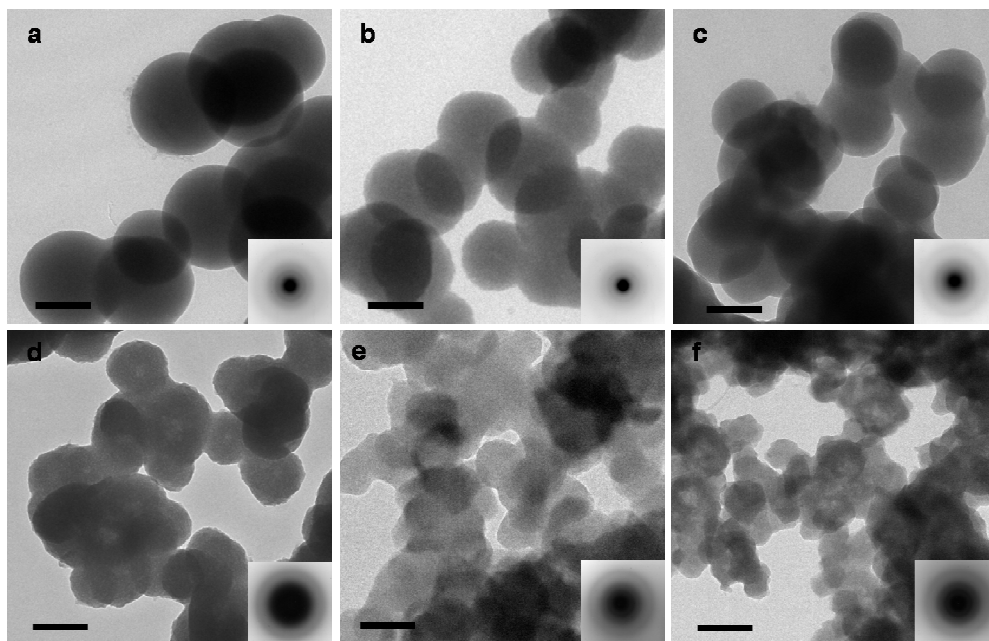
Sha-Sha Wang, An-Wu Xu\*



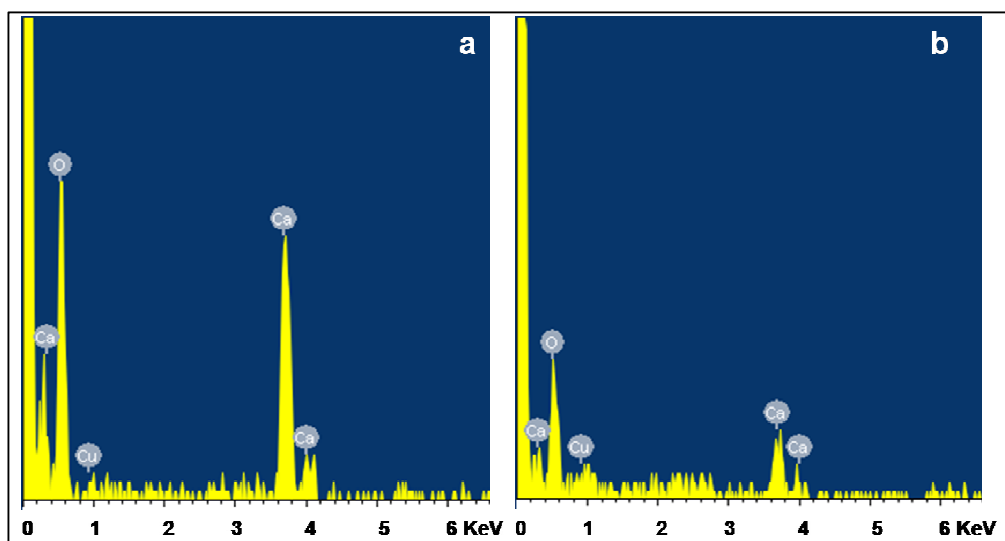
**Figure S1.** Infrared spectra of ACC particles prepared at (a) 0, (b) 10, (c) 15, (d) 35, (e) 50, and (f) 70 mg DA after 2.5 min reaction. Reference spectra of DA molecules and PDA particles were recorded in (h) and (g), respectively.



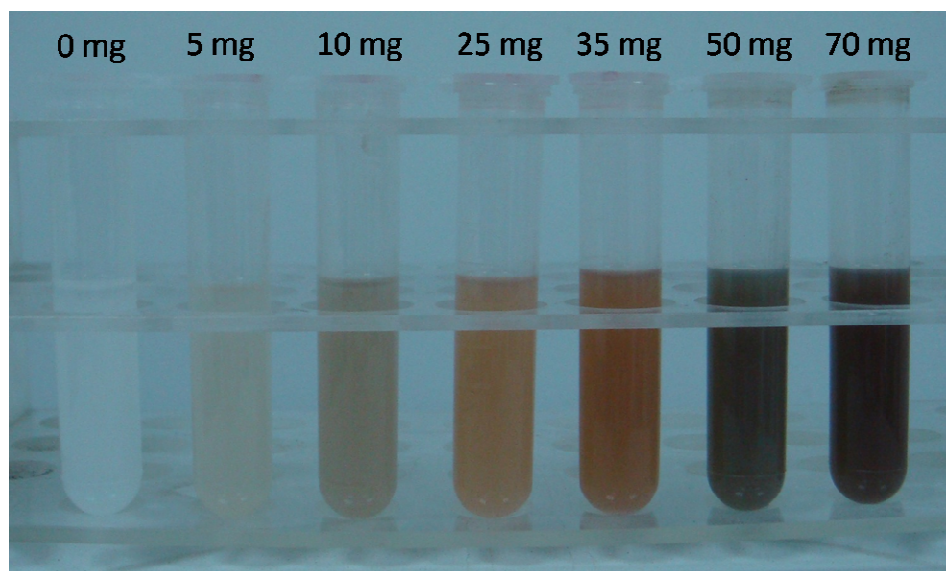
**Figure S2.** SEM images of the obtained amorphous calcium carbonate (ACC) nanoparticles prepared with different amounts of dopamine (DA): (a) 0 mg, (b) 5 mg, (c) 10 mg, (d) 15 mg, (e) 25 mg, (f) 35 mg, (g) 50 mg, and (h) 70 mg after 2.5 min reaction. The scale bars are 500 nm.



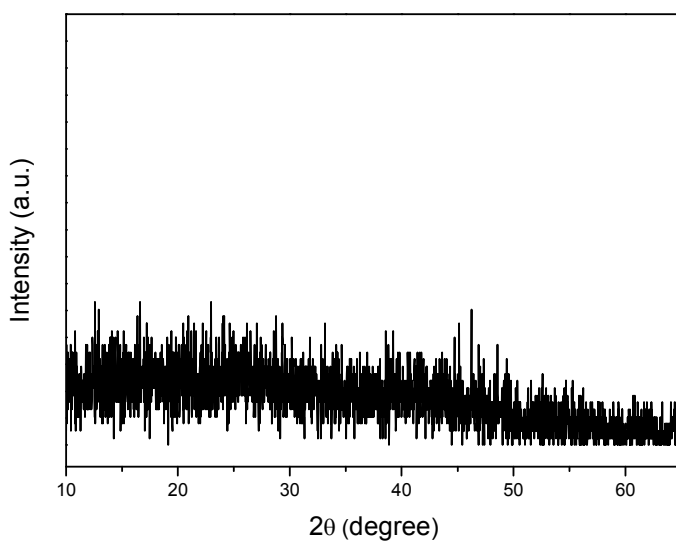
**Figure S3.** TEM images of the obtained amorphous calcium carbonate nanoparticles produced in the presence of (a) 0 mg, (b) 5 mg, (c) 10 mg, (d) 25 mg, (e) 35 mg, and (f) 60 mg DA after 2.5 min reaction. Inserted electron diffraction (SAED) patterns confirm that all the as-prepared particles are amorphous in nature. The scale bars are 200 nm.



**Figure S4.** EDX microanalyses of the dark inner core (1) and the pale outer shell (2) marked by white circles in Figure 2b clearly show that the content of  $\text{CaCO}_3$  is much higher in the core than the shell of the spheres.



**Figure S5.** The photograph of ACC floccules synthesized with different amount of DA molecules after 2.5 min growth, then washed thoroughly with acetone and dispersed in 6 mL of ethanol. The darker the floccules the thicker the PDA shell.



**Figure S6.** XRD pattern of the dried amorphous calcium carbonate produced with 50 mg DA after 2.5 min reaction kept in the air for one year at room temperature.