

## Supporting Information

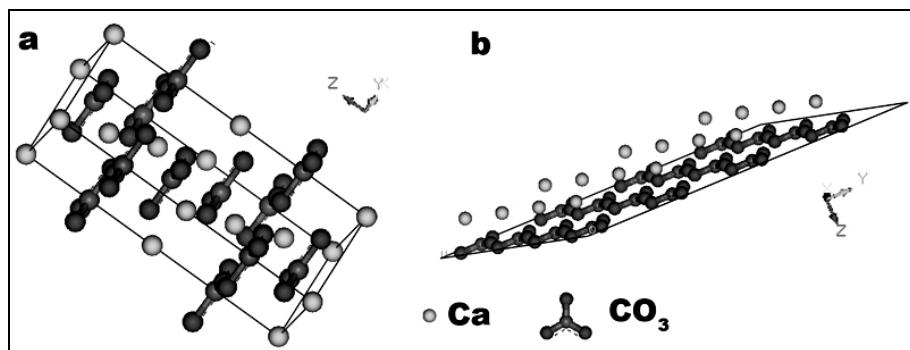
### Growth of Calcium Carbonate Mediated by Slowly Released Alginatet

Boxun Leng,<sup>a,c</sup> Fuguang Jiang,<sup>a</sup> Kangbo Lu,<sup>c</sup> Weihua Ming\*<sup>b,c</sup> and Zhengzhong Shao\*<sup>a</sup>

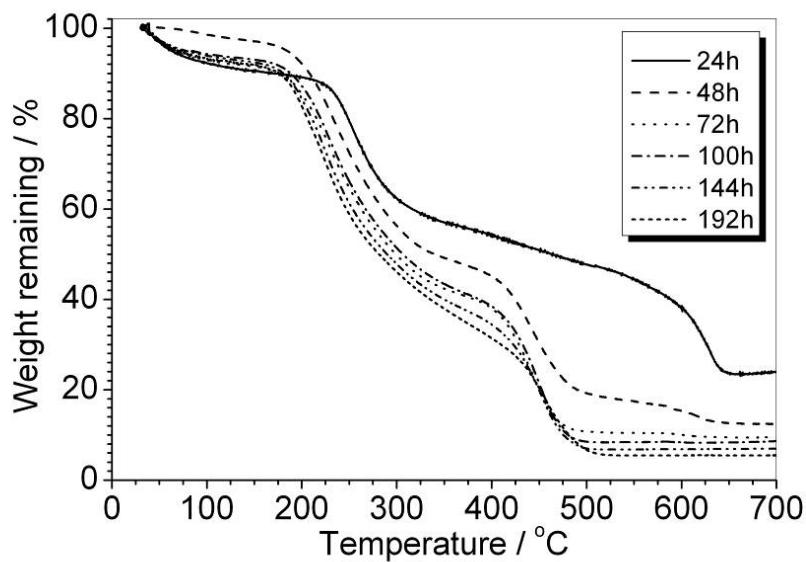
<sup>a</sup> Key Laboratory of Molecular Engineering of Polymers of Ministry of Education, Advanced Materials Laboratory, Department of Macromolecular Science, Fudan University, Shanghai, 200433, P. R. China. E-mail: zzshao@fudan.edu.cn

<sup>b</sup> Nanostructured Polymers Research Center, Materials Science Program, University of New Hampshire, Durham, NH 03824, USA. E-mail: W.Ming@unh.edu

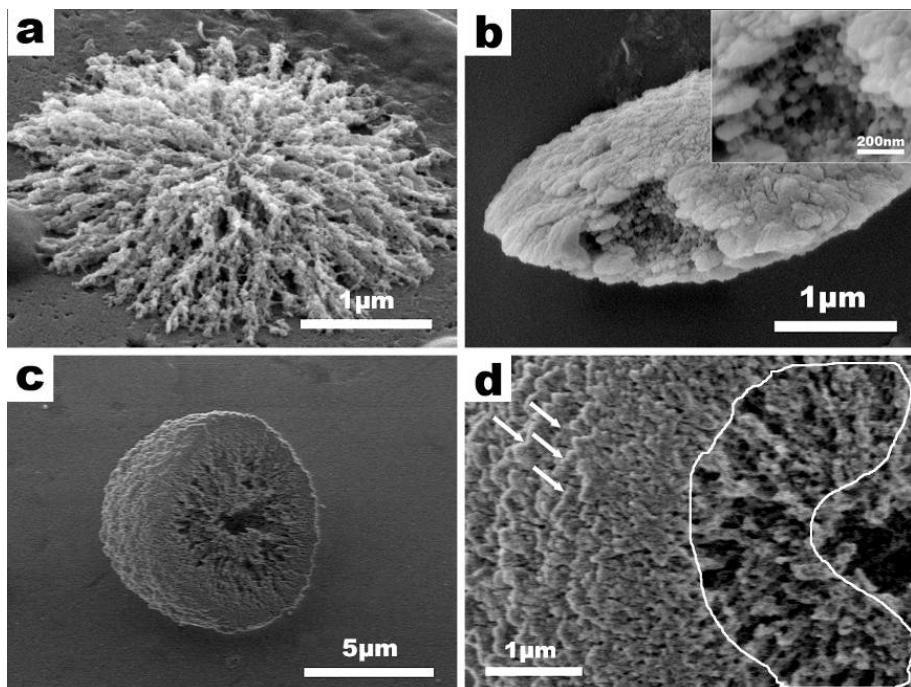
<sup>c</sup> Laboratory of Materials and Interface Chemistry, Eindhoven University of Technology, Eindhoven, 5600 MB, the Netherland



**Fig. S1** (a) is the ball-stick model of vaterite cell. It belongs to hexagonal. (b) is the scheme of (001) surface of vaterite. It is only composed of either exclusively Ca<sup>2+</sup> or CO<sub>3</sub><sup>2-</sup>.



**Fig. S2** At each reaction time, the serum in the reacted system except the deposits on the slide were carefully collected and dried at 100 °C. After being dried, the residue was collected for TGA measurement.



**Fig. S3** Some interesting particles were found on the glass slide after reaction for different time. (a) One actinomorphic particle that was made up of strands of nanoparticles was found on top of one calcite particle after 24h reaction. (b) One cracked lens-like particle was found after 100h reaction. (c) The cross-section of one particle after 144h reaction. (d) is the enlarged part of (c).