Figure S1. SEM images of CaCO₃ crystals obtained in (a) 0.01M [Ca²⁺], 1g/L NaCMC, the surface of the imperfect composed of nanoparticles; (b) 0.01M [Ca²⁺], 0.5g/L NaCMC; (c) 0.01M [Ca²⁺], 0.1g/L NaCMC; (d) control sample, i.e. no additives; (e)(f) 0.1M [Ca²⁺], 0.5g/L NaCMC.
**Figure S2.** TGA curve of the products obtained after 4 days reaction from 0.01M [Ca$^{2+}$] and 0.5g/L NaCMC solution.

**Figure S3.** TGA curve of the products obtained after 4 days reaction from 0.01M [Ca$^{2+}$] and 0.1g/L NaCMC solution.
Figure S4. TGA curve of pure NaCMC powder.

Figure S5. TGA curve of the products obtained after 4 days reaction from 0.1M [Ca\(^{2+}\)] and 1g/L NaCMC solution.
Figure S6 SEM images of CaCO\textsubscript{3} crystals obtained in 0.01M [Ca\textsuperscript{2+}] and 0.5g/L NaCMC aqueous solutions after 4 hours reaction (a) and enlarged image (b).