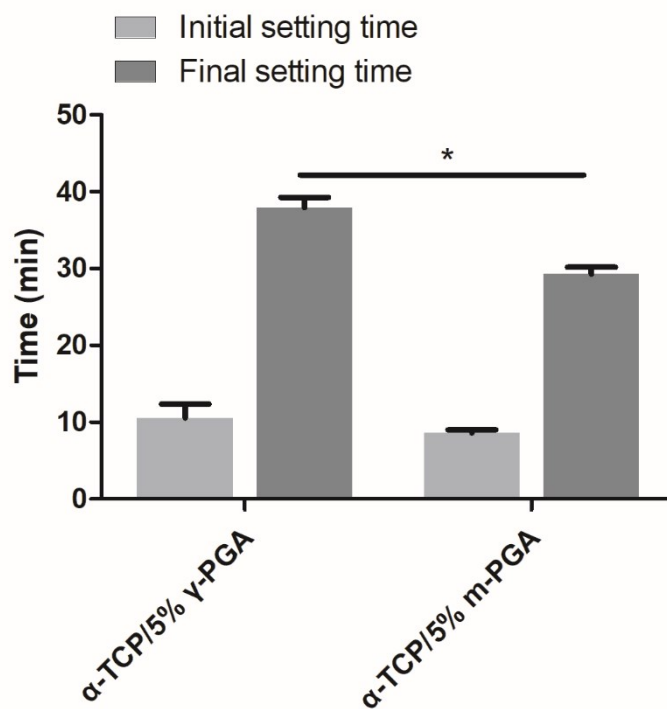
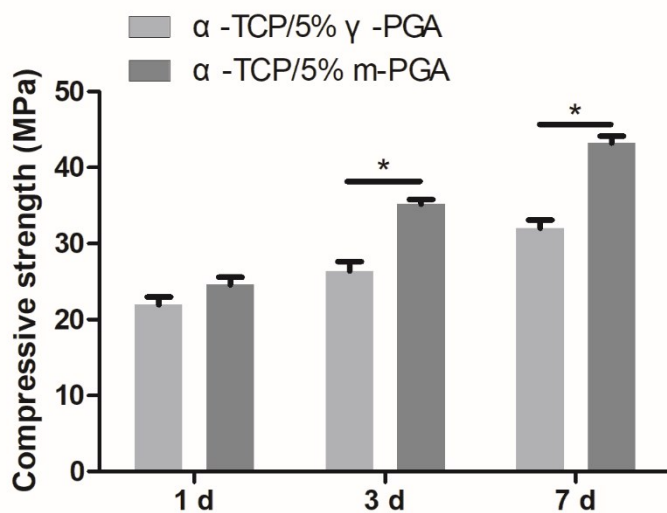


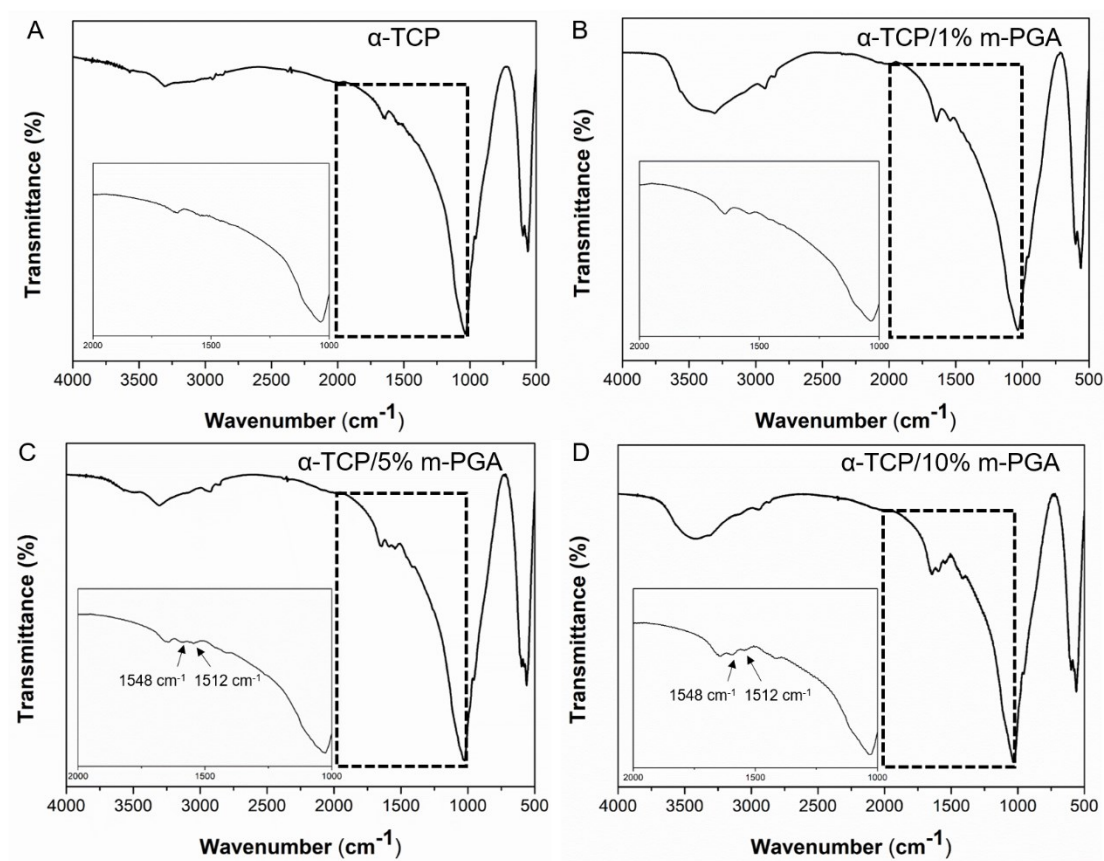
### Supplementary information



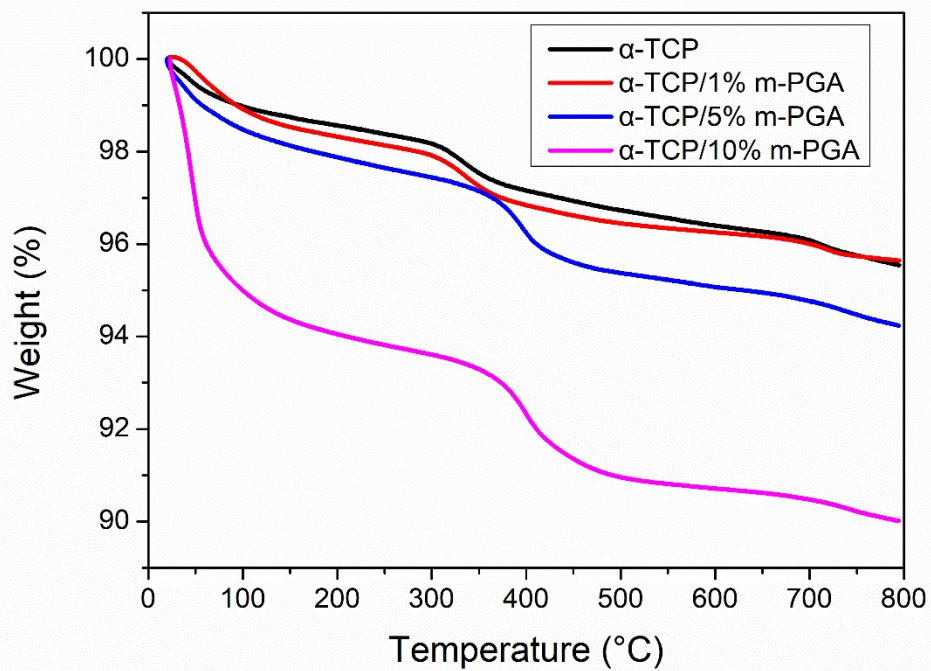
**Figure S1.** Setting time of the  $\alpha$ -TCP cements with 5%  $\gamma$ -PGA or 5% m-PGA solutions (\* indicates  $p < 0.05$ ).



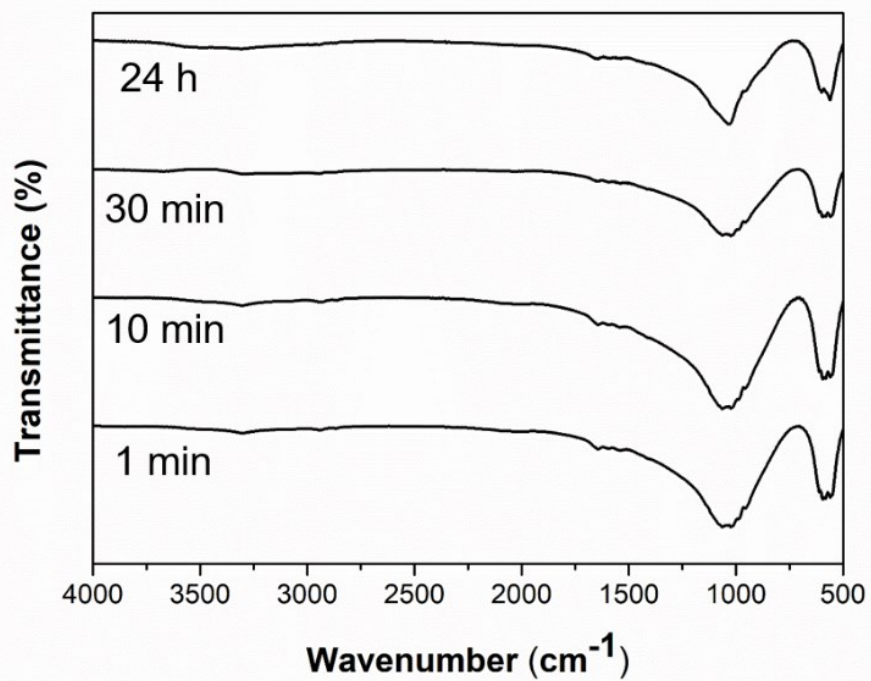
**Figure S2.** Compressive strength of the  $\alpha$ -TCP cements with 5%  $\gamma$ -PGA or 5% m-PGA solutions (\* indicates  $p < 0.05$ ).



**Figure S3.** FTIR spectra of  $\alpha$ -TCP (A),  $\alpha$ -TCP/1% m-PGA (B),  $\alpha$ -TCP/5% m-PGA (C) and  $\alpha$ -TCP/10% m-PGA (D) cements.



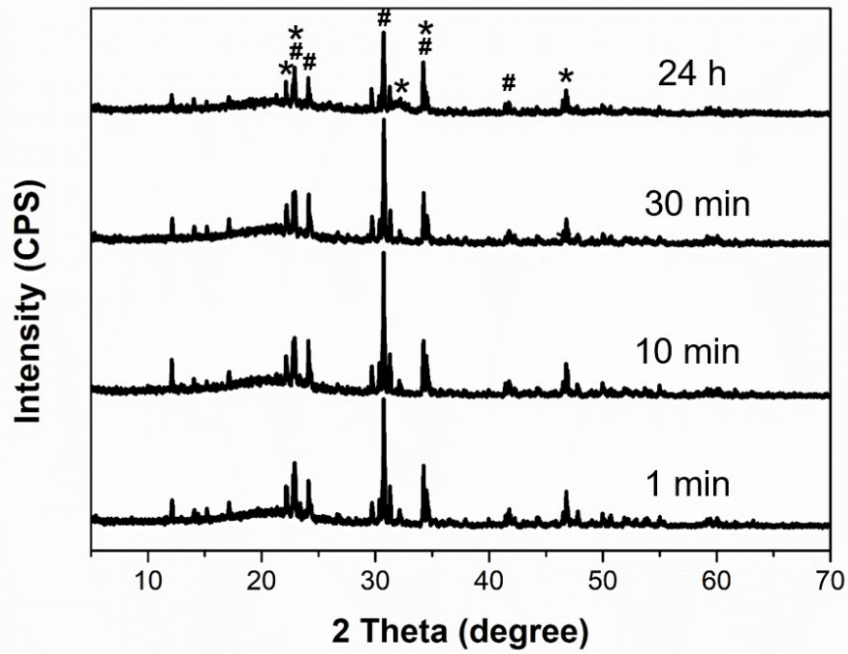
**Figure S4.** TGA of  $\alpha$ -TCP cements with different concentrations of m-PGA solutions.



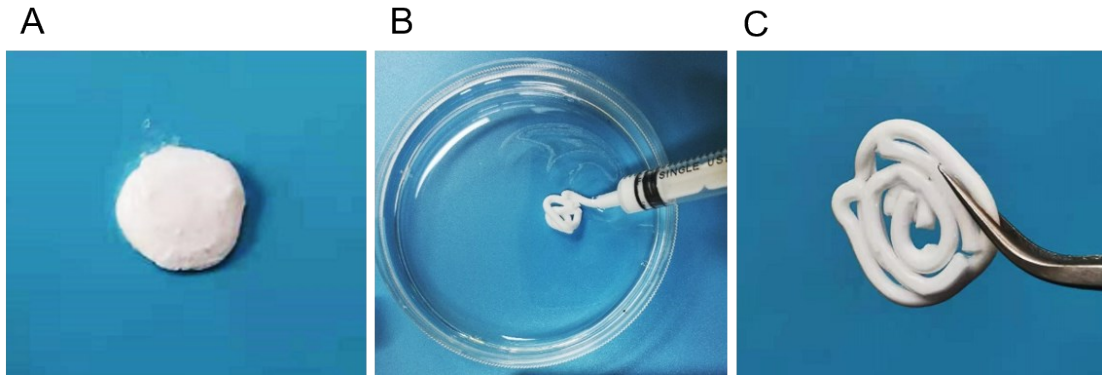
**Figure S5.** FTIR spectra of  $\alpha$ -TCP/5% m-PGA cements after mixing for 1 min, 10 min, 30 min and 24 h.

\* Hydroxyapatite

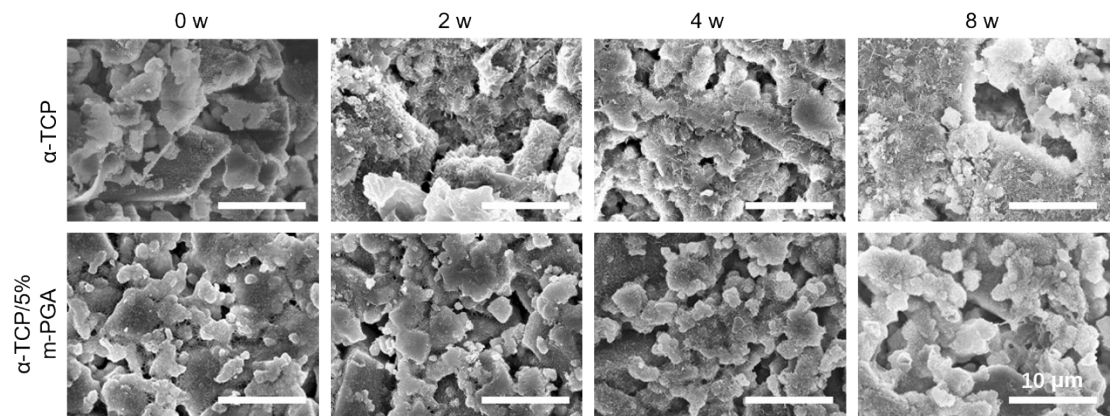
#  $\alpha$ -tricalcium phosphate



**Figure S6.** XRD patterns of  $\alpha$ -TCP/5% m-PGA cements after reacting for different times.



**Figure S7.** Images of  $\alpha$ -TCP/5% m-PGA cements after mixing (A), injection (B) and molding (C).



**Figure S8.** SEM images of  $\alpha$ -TCP cements and  $\alpha$ -TCP/5% m-PGA cements after soaking for 0, 2, 4 and 8 weeks.