

Supplementary data

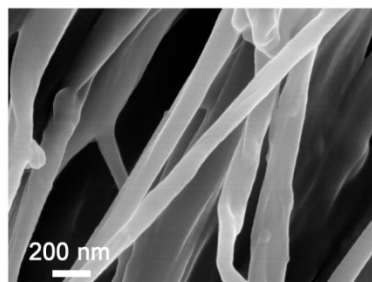


Fig. S1. SEM image of original collagen fibrils.

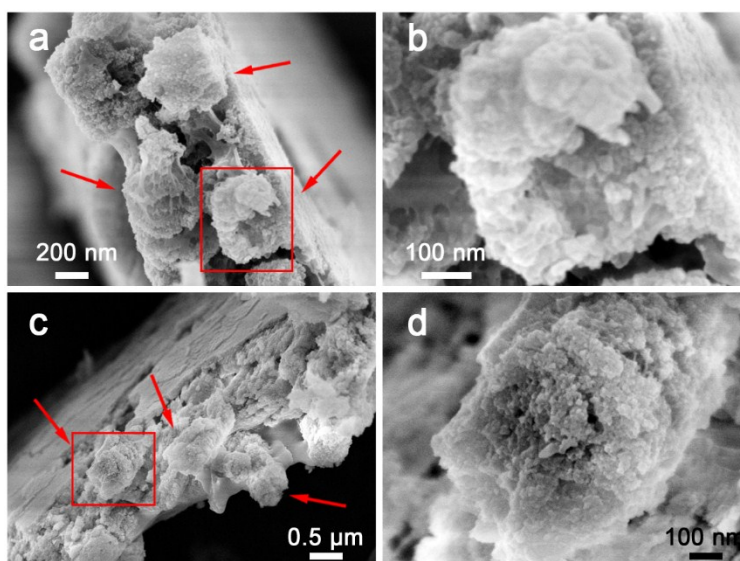


Fig. S2. Cross sectional SEM images of broken fibrils for (a) (b) 48 h and (c) (d) 72 h mineralization.
(b) and (d) images are the magnified areas of red box in (a) and (c), respectively.

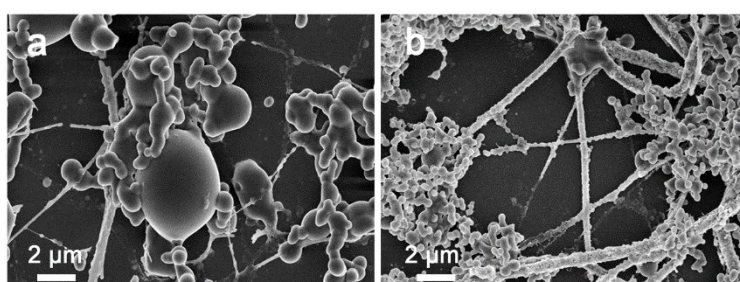


Fig. S3. SEM images of reconstituted collagen fibrils for (a) 24 h, (b) 48 h mineralization.

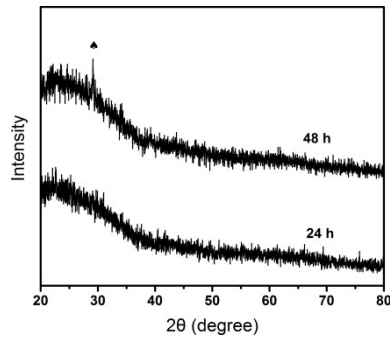


Fig. S4. XRD patterns of mineralized collagen fibrils for (a) 24 h and (b) 48 h.

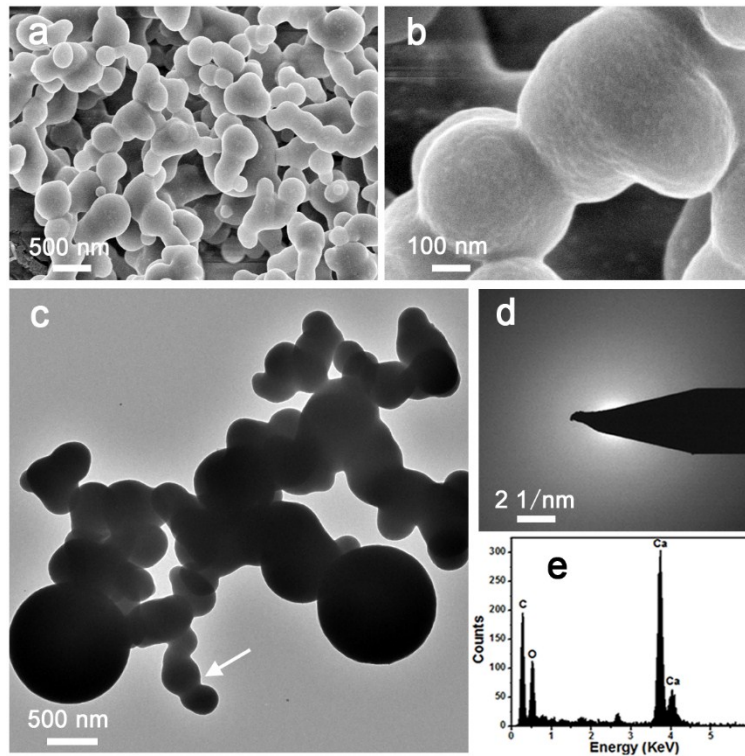


Fig. S5. Electron microscopy images and energy dispersive spectrometer of spherical droplets. (a) Low and (b) high magnification SEM images of spherical particles. (c) TEM image of spherical particles; The white arrow points to two droplets coalescing together. (d) SAED pattern and (e) EDS of spherical particles in (c).

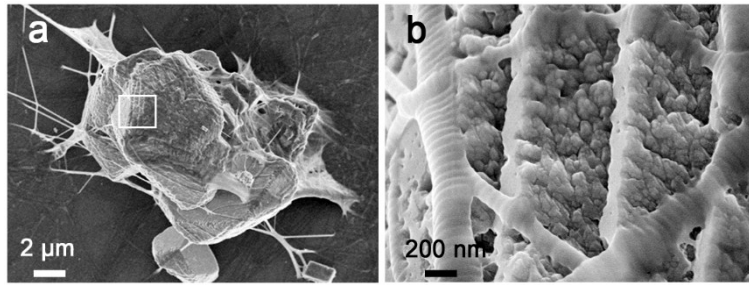


Fig. S6. (a) Low and (b) high magnification SEM images of extrafibrillar mineralization.

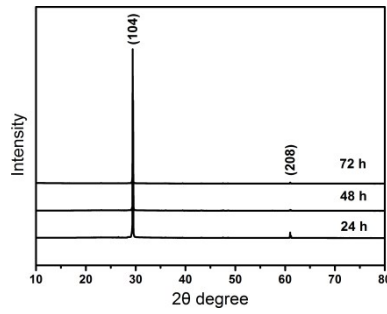


Fig. S7. XRD patterns of samples in the absence of polyacrylic acid.

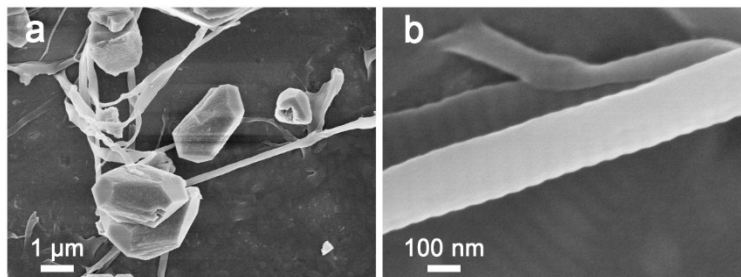


Fig. S8. (a) Low and (b) high magnification SEM images of collagen mineralization in the presence of aspartic acid for 72 h.

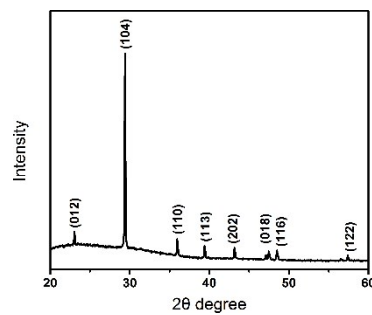


Fig. S9. XRD patterns of collagen mineralization in the presence of aspartic acid.

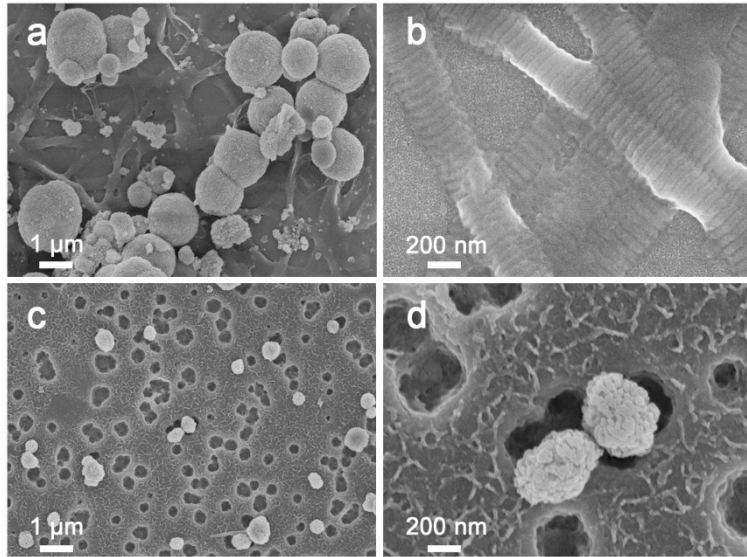


Fig. S10. SEM images of collagen mineralization for 72 h in the presence of poly(styrene sulfonate) (a) (b) and ovalbumin (c) (d). (a) (c) Low and (b) (d) high magnification.

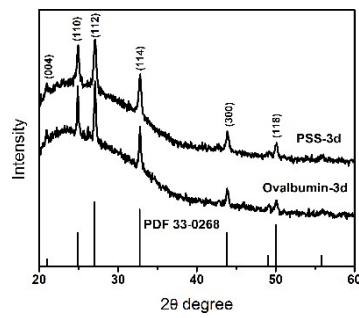


Fig. S11. XRD patterns of collagen mineralization in the presence of poly(styrene sulfonate) and ovalbumin. The crystalline phase is vaterite.

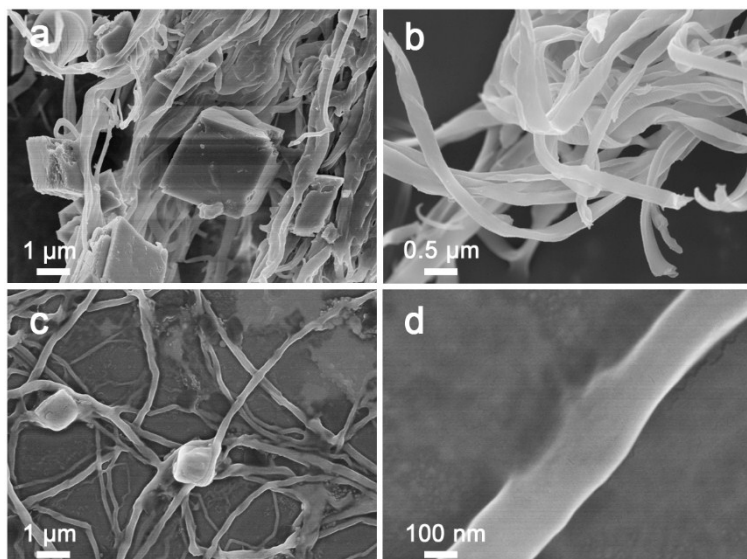


Fig. S12. SEM images of collagen mineralization for 72 h without additives. (a) (b) 5 mM, (c) (d) 2 mM.

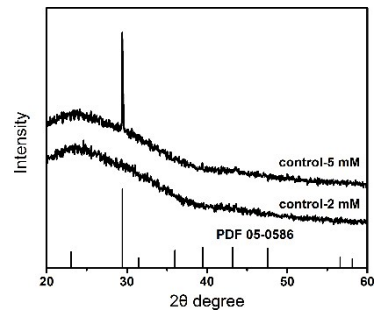


Fig. S13. XRD patterns of collagen mineralization for 72 h without additives.

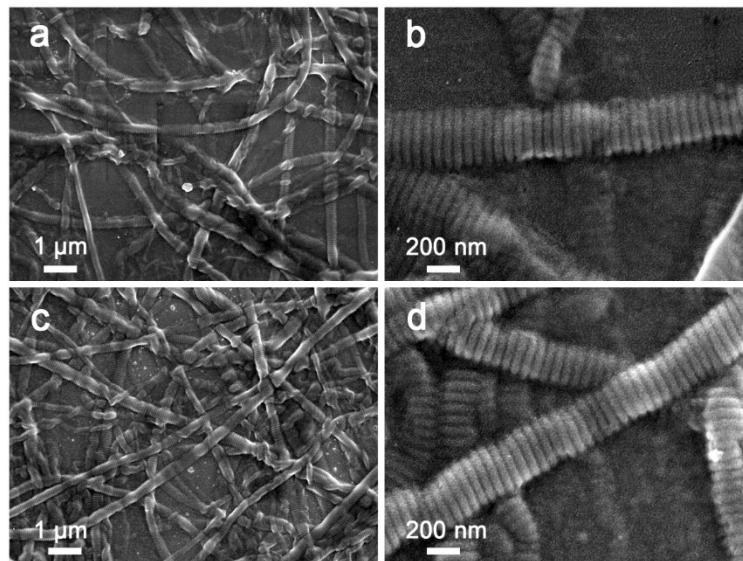


Fig. S14. SEM images of collagen mineralization for 72 h. (a) (b) 5 mM, (c) (d) 2 mM.

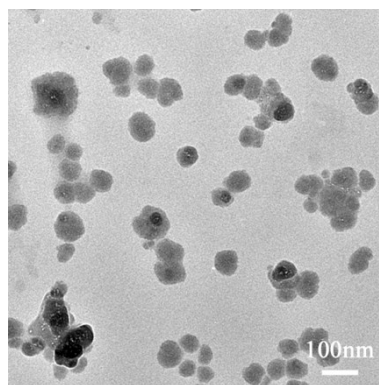


Fig. S15. TEM image of Mg-ACC.

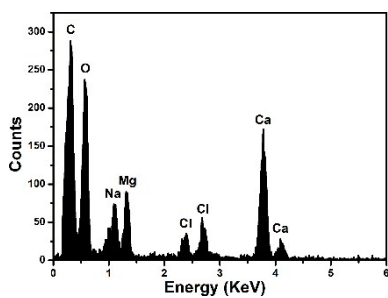


Fig. S16. EDS of Mg-ACC. Na and Cl elements are from the mineralization solution.